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REPORT

OF THE

DEPARTMENT OF MINES,

NOVA SCOTIA,

For the Year ending 30th September, 1902.

HALIFAX, N. S.:
COMMISSIONER OF PUBLIC WORKS AND MINES, KING'S PRINTER,
1903.

HOLLOWAY BROS., PRINTERS, 69 & 71 GRANVILLE ST.

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DEPARTMENT OF MINES.

REPORT FOR THE YEAR ENDED SEPTEMBER 30, 1902.

To His Honour THE HONOURABLE ALFRED GILPIN JONES,
Member of the King's Privy Council for Canada,
Lieutenant-Governor of Nova Scotia, &c., &c.

MAY IT PLEASE YOUR HONOUR,—

I respectfully present herewith to Your Honour the Annual Report of the Inspector of Mines, containing an account of the progress of mining operations, together with statistical information compiled by him from official and other returns.

I am,

Your Honour's obedient servant,

A. DRYSDALE,
Commissioner of Public Works and Mines.

HALIFAX, January 2nd, 1903.

ERRATUM, p. 3.

Production of Barytes during year 1902 should be 742 tons.

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REPORT

ON THE

MINES OF NOVA SCOTIA.

By EDWIN GILPIN, Jr., A.M., LLD.

FELLOW OF THE ROYAL SOCIETY OF CANADA, ETC., ETC.

Office of Inspector of Mines,
Halifax, December 28th, 1902.

To the Honourable A. Drysdale, M.P.P., M.E.C.,
Commissioner of Public Works and Mines:—

Sir,—I beg leave to submit the following report on the Mines of Nova Scotia.

The following summary shows, so far as I have been able to learn, the mineral production of Nova Scotia for the year ending September 30th, compared with that for the year ending September 30th, 1901.

		Year ending Sept. 30, 1901.	Year ending Sept. 30, 1902.
Gold	oz	30,537	28,279
Iron Ore*	Tons	419,567	489,731
Manganese Ors†	"	10	150
Coal raised†	"	3 625,365	4,362,869
Coke made†	"	120,000	406,152
Gypsum†‡	"	135,637	173,000
Grindstones, etc.	"	315	4,000
Limestone†	"	95,794	223,606
Barytes	"	600	550
Pig Iron	"	90,034	206,193
Moulding Sand	"		1,390

* Including imported ore, 474,517 tons.
† Ton of 2,240 lbs.
‡ Amount exported.

Note—Further details will be found in the tables at end of report.

STATEMENT SHOWING AMOUNTS AND SOURCES OF REVENUE RECEIVED BY MINES DEPARTMENT DURING YEAR ENDED SEPT. 30th, 1902.

	1st. QUARTER.	2nd QUARTER.	3rd. QUARTER.	4th QUARTER.	TOTAL.
Pros. Licenses	$ 2553 50	$ 1640 00	$ 2638 50	$ 2336 50	$ 9168 50
Rents (Gold Lease Applications)	1156 00	968 00	2973 00	1740 00	6837 00
Gold Rentals	2128 50	1980 00	2729 50	2217 00	9055 00
Licenses to Search	2730 00	4710 00	4710 00	3900 00	16050 00
Leases (other than Gold or Silver)	800 00	1350 00	650 00	700 00	3500 00
Rentals (other than Gold or Silver	2580 00	5370 00	2250 00	5220 00	15420 00
Gold Royalty	4631 36	2971 87	3017 69	2505 35	13126 27
Coal Royalty	121633 45	94655 15	82630 18	114638 06	413556 84
	$138212 81	$113645 02	$101598 87	$133256 91	$486713 61
Fees					1235 29
					$487948 90

Less amount at the rate of 6¼ cents on each ton of coal consumed in the manufacture of iron and steel in Nova Scotia paid to the Dominion Iron and Steel Company.

October 24th, 1901	$ 4869 23
March 31st, 1902	7435 74
April 24th, 1902	7350 88
	$19655 85

During the past year surveys were made in a number of the gold districts. Mr. R. W. McKenzie surveyed a number of coal leases in Cape Breton County, and Mr. F. W. Christie began a systematic survey of the coal leases in the Chimney Corner district.

The collection of minerals for the Paris Exhibition has been utilised at a number of local exhibitions and is now deposited in the Canadian Department of the Imperial Institute with the exception of some of the gold specimens which will shortly be returned.

Work has been continued in the Provincial Museum, and it is assuming as rapidly as possible its ultimate design as a collection representing the natural resources, etc., of the Province.

The Science Library has been enriched by numerous books during the past year. A report on the Library and Museum will be appended.

The usual schools for candidates for certificates in Coal Mining and as Enginemen were held during the summer and the following candidates received certificates:

ENGINEMEN'S CERTIFICATES GRANTED, 1902.

No.	Name.	Address.	Class.
135A	Philip E. Smith	Port Morien	First Class.
136	Henry Court	Westville	Second.
137	Jediska Bowlsby	Joggins	"
138	Willard Mills	"	"
139	Geo. J. McAulay	Port Morien	"
140	Bonsfield Allison Leonard	Whitney Pier	"
141	Gus. W. McAulay	Port Morien	"
142	Robt. Swetman	Joggins	Third
143	Alex Skinner	Westville	"
144	Robt. Augevine	Six Mile Rd., Cumb. Co.	"
145	John R. McDonald	Coalburn, Pictou Co.	"
146	Wm. J Moffatt	River Hebert	"
147	Hugh McDougall	Stellarton	"
148	John Henderson	Westville	"
149	Harry W. Martin	West River Hebert	"
150	Malcolm McNeil Smythe	Port Hood	"
151	William McInnes	Glace Bay	"
152	Alonzo Johnson	Joggins	"
153	Daniel Brothers	North Sydney	"
154	Arthur A. Shearer	Glace Bay	"
155	Hilary Brown	"	"
156	John D. Fraser	Sydney	"
157	Donald J. Gillis	Glace Bay	"
158	William D. Hale	Dominion, No. 1	"
159	Garnet Burchell	Bridgeport	"
160	John McWatt	Glace Bay	"
161	John D. Morrison	Dominion, No. 1	"
162	Murdoch Robertson	Glace Bay	"
163	Granville Dryden	Westville	"
164	Colin McGillivray	New Glasgow	"
165	Murdoch McKenzie	Westville	"
166	Willard M. Walters	"	"
167	John A. McDonald	Port Hood	"
168	John McGregor	Coalburn	"
169	John Young	Port Hood	"
170	James A. Fraser	Stellarton	"
171	John W. McIssac	Broad Cove Mines	"
172	William Ruwan	Stellarton	"
173	James Mitchell	"	"
174	Rory McIsaac	Broad Cove Mines	"
175	John Clifton	Thorburn	"

ENGINEMEN'S CERTIFICATES GRANTED. 1902.—*Continued.*

No.	Name.	Address.	Class.
176	Warren E. Reynolds	Stellarton	Thirp.
177	Cameron Johnson	Port Hood	"
178	Frank Aldred	Dominion, No. 2	"
179	Walter Miller	Westville	"
180	Duncan McDonald	Port Morien	"

MINE OFFICIALS CERTIFICATES GRANTED, 1902.

No.	Name.	Address.	Grade.
200A	D. L. McKay	Reserve Mines	Und. Manager.
201A	Angus Munro	"	"
202A	Neil A. McKenzie	"	"
203A	William Tobin	Sydney Mines	"
204A	Malcolm Beaton	Dominion No. 1	"
205A	Andrew Irvine	Glace Bay	"
206A	John D. McDonald	Dominion No. 1	"
207A	John Allan McDonald	Dominion No. 3	"
208A	D. H. Holland	Broad Cove Mines	"
209A	J. R. McDonald	Thorburne	"
210A	Evett Sutherland	Westville	"
211A	Alonzo Gratto	"	"
212A	W. B. Muirhead	"	"
213A	Robert Henderson	"	"
214A	Robert H. Gray	"	"
215A	John Brace	Springhill	"
216A	Jas. E. McPherson	"	"
217A	J. W. Schurman	"	"
218A	Wm. A. McPherson	"	"
219A	James Scott	"	"
220A	Joseph Moss	"	"
221A	Duncan Blue	"	"
222A	Peter Murphy	Joggins	"
223A	Alex. Stewart	"	"
224A	Alex. Liddle	"	"
209B	Fred Jesso	Glace Bay	Overman.

MINE OFFICIALS CERTIFICATES GRANTED, 1902.—*Continued.*

No.	Name.	Address.	Grade.
210B	John C. McNeil	Glace Bay	Overman.
211B	Wm. B. Scott	"	"
212B	Jas. Anderson	Dominion No. 4	"
213B	Robt. Lorimer	Caledonia	"
214B	Alex. McDonald	Sydney Mines	"
215B	Rory J. McNeil		
216B	John Caldwell	Dominion No. 1	"
217B	Michael McLeod	Caledonia	"
218B	John E. Fortune	Bridgeport	"
219B	J. R. McNeil	Dominion No. 1	"
220B	John D. Johnson	Caledonia	"
221B	J. D. Colburne	Sydney Mines	"
222B	W. E. Paton	Dominion No. 3	"
223B	G. B. Burchell	New Campbellton	"
224B	H. A. McLeod	Broad Cove Mines	"
225B	Samuel Beaton	"	"
226B	Edw. D. McKenzie	Port Hood	"
227B	John Young	"	"
228B	Fraser A. McKay	Thorborn	"
229B	Angus McIntosh	"	"
230B	Donald Fraser	"	"
231B	A. D. Fraser McKay	"	"
232B	Kenneth Cameron	"	"
233B	Geo. H. Sutherland	"	"
234B	Joseph Reid	Westville	"
235B	Henry Henderson	"	"
236B	G. Roach McKay	Springhill	"
237B	John R. Cameron	"	"
238B	Chas. Rent	"	"
239B	Geo. R. McPherson	"	"
240B	Angus McDonald	Glace Bay	"
53C	D. H. Ferguson	Caledonia	Manager.
54C	John McDonald	Port Morien	"
55C	Simon Lott	Glace Bay	"
56C	John W. Devison	"	"
57C	Richard Wilton	Caledonia	"
58C	Thomas Bown	Port Morien	"

The drills have been kept in use in various parts of the province and fuller details will be given separately.

COAL TRADE.

The returns of coal sold during the year 1902 show, when compared with those of the year 1901, as follows:

	1901.	1902.
Nova Scotia	998,814	1,382,563
New Brunswick	349,994	319,338
P. E. Island	53,773	56,203
Newfoundland	105,620	105,287
Quebec	1,017,046	1,243,980
West Indies	....	5,982
United States	590,086	751,382
Other Countries	4,002	33,891
	3,119,335	3,898,626

The production was 4,366,869 tons compared with 3,625,365 tons in 1901.

The sales in Nova Scotia showed an increase of 383,749 tons, due principally to the requirements of the Dominion Iron and Steel Company, which drew its supply for coke and other purposes from the Dominion Coal Company. The sales to New Brunswick showed a slight decrease. The exports to Newfoundland and Prince Edward Island remained stationary. The sales to Quebec increased by nearly a quarter of a million tons. The sales to the United States showed an increase of about 200,000 tons.

CUMBERLAND COUNTY.

During the year the production was 544,917 tons, compared with 478,226 tons in 1901. The Springhill Collieries raised 480,676 tons, and the Joggins Mines raised 58,027 tons. The balance was produced by the smaller mines.

PICTOU COUNTY.

This County produced last year 515,603 tons against 490,168 tons in 1901. The Acadia Company raised 286,582 tons and the Intercolonial Company raised 206,599 tons. The Marsh Colliery of the Nova Scotia Steel and Coal Company is now in good working order and produced 22,422 tons.

The following report by Mr. A. V. Cameron, Deputy Inspector of Mines, will give details of the operations at the several collieries in Pictou and Cumberland Counties during the past year.

SPRINGHILL, Oct. 4th, 1902.

E. GILPIN, ESQ.,

Deputy Commissioner and Inspector of Mines.

SIR,—I have the honor to submit to you herewith a report on the various mines in the districts of Pictou and Cumberland Counties for the year ending 30th September, 1902.

NO. 1 SLOPE, SPRINGHILL.

In this mine there was a continuation of pillar work until the end of April, when the seam was abandoned at this point and continued to No. 2 through Aberdeen fault, where the seam is divided by some twenty feet of strata.

The upper or fall seam was extended 559 feet, or a total distance of 2,739 feet, and the lower or bench coal was extended 515 feet or a total distance of 2,145 feet.

In June last a tunnel was driven to connect those two seams to better facilitate the handling of all three seams by haulage at the mouth of Aberdeen tunnel. Here a large turnout has been made capable of holding fifty boxes.

The haulage has been installed at this slope and is ready at any time to convey the coals from the three seams to No. 2 slope. In fact several trips have been run to insure that all is in order.

It is now two years, on Sept. 20th, since the Aberdeen seam was struck. During the last year 900 feet of slope has been cleaned out and timbered, a permanent bottom laid, and upwards of 250 feet of sinking driven in coal 11 feet thick, and free from shale, stone or slate.

The east level has also been extended 1,922 feet, or a total distance of 3,630 feet from Aberdeen tunnel, making a total distance from No. 2 slope of 7,854 feet, with several chutes and balances to the rise.

The west side of Aberdeen is now being worked "bord and pillar," stripping the Aberdeen Fault for a considerable distance to the rise.

On the west side of No. 2 slope the extraction of pillars has been continued during the year. On this side 129 feet were driven in the cross section tunnel, making the total length of the tunnel 1,122 feet.

SURFACE NO. 2.

At this slope a new electric light plant has been installed, and a new brick electric station built. The system consists of 2 sets of 1,000 lights, alternating generators, driven by a pair of 13x14 inch Ideal centre crank engines, built by Goldie & McCulloch, of Galt, Ont. A foundation for a pair of new hoisting engines, 30x48 inches, is rapdly nearing completion at this slope. The engines are furnished with 2 cast iron drums, 7 feet in diameter, with flanges deep enough to fold 6,000 feet of 1¼ inch rope on each drum.

LAMP HOUSE.

A new vertical engine, 5x8 inches, and shafting has been placed in this building for the purpose of running the lamp cleaning machine.

LAMP REPAIR SHOP.

In this shop a small Barnes' Lathe is used, and an improved Barnes' power drilling machine has just been erected.

NO. 3 SLOPE, SPRINGHILL.

The bord and pillar working has been continued throughout the year in the 2,600 feet west level, commencing 9,420 feet from the main slope, leaving a solid pillar of 108 feet to maintain the return air-course. During this time the 3,200 feet level was extended 2,321 feet, or a total distance of 9,180 feet, with places to the rise at intervals of 600 feet for ventilating purposes.

On the east side of this slope, both at the 2,600 feet level and at the 3,200 feet levels bord and pillar work has been carried on, though on a small scale, on account of the levels being shorter.

At the 3,800 feet levels a permanent bottom has been laid, and the west levels extended 364 feet, and the east levels extended 225 feet. The main slope was extended 319 feet, making a total distance of 4,119 feet.

At this point it was deemed advisable to stop the 3,800 feet levels, and also the sinking on account of all being well advanced. This work could be started again, with a few days notice, with a staff of 30 miners.

The air courses, returns and travelling ways in these slopes are in first class condition and everything in and around these collieries, especially the ventilation, is in good condition.

SURFACE NO. 3 SLOPE.

At this slope 12 Jones' underfeed mechanical stokers with automatic feed attachment have been installed and have given very good results. A new winding engine house has been erected. It is built of wood, with galvanized and corrugated iron outside, and makes a very neat appearance. A new capell fan is being erected with a capacity of 200,000 cubic feet per minute, on a concrete foundation. A concrete and brick engine house, with engine to drive fan, size 24x18 inches, has also been put up.

RAILWAY DEPARTMENT.

Three thousand tons of 80 lb. rails are being laid between Springhill and Parrsboro to replace the old 67 lb. rails.

Three new steel bridges have been put in, averaging 35 feet in length. Seventy-five new 15 ton hoppers have been built for the company by Messrs. Rhodes, Curry & Co., Amherst.

A new locomotive house is in course of erection.

A new consolidation locomotive has been purchased from the American Locomotive Co., Richmond, Virginia. The general description being, cylinders 21x28 inches, driving wheels 50 inches in diameter. Total weight when in working order 184,000 lbs. Weight of tender with fuel and water 103,000 lbs. Capacity of tender tank 6,000 gallons. Total weight of engine and tank when in working condition 147 tons

JOGGINS MINES, NO. 2 SLOPE.

The principal work in this slope has been confined to the 2,500 feet lift, and the bulk of the coal has been taken from gateways on the east and west sides.

The west levels are in a distance of 1,700 feet from the slope, and are within 600 feet of the fault intervening between these workings and those of the old slope to the west.

The clay division is considerably thicker than usual and is considered to be due to the local roll. But the coal retains its usual good quality.

An attempt is being made in this section of the mine to recover some lost coal to the rise of the 2 300 feet level, and good progress, considering the broken nature of the ground, has been made.

The east levels, which had been driven 1,450 feet, as mentioned in my last year's report, have been continued and a junction made with the upper west level from No. 3 slope. This connection permitted the water made in No. 3 slope to be brought to the pump at No. 2, and did away with having to pump up to the 1,900 feet level, and also rendered the ventilation of the mine easier. No. 2 slope has been sunk a further depth of 600 feet and levels started east and west.

The sinking of this lift was accomplished in the face of many difficulties. When down about 570 feet a down throw fault of some 15 feet was penetrated, which necessitated a large amount of grading. Compared with other parts of the mine the clay division largely diminished, averaging throughout the lift about 10 inches.

A small engine, previously used to drive a picking belt, was placed at the back sinking, which is now going down rapidly.

NO. 3 SLOPE, JOGGINS MINES.

The east levels of the 2,500 feet landing were stopped several months ago, as the clay rather increased than diminished in thickness, and was expensive to work. Under more favorable circumstances the management contemplate resuming the exploratory works with the hope of reaching more satisfactory ground as the coal throughout this slope is of very good quality.

The bords on the west side driving towards No. 2 slope got into faulty ground, and it was not considered advisable to proceed any further, as the coal beyond the fault could be obtained easier from No. 2 slope side. Owing to this fact and and the very short working lift in No. 2 slope the output has dropped considerably, but the management anticipate the production of a larger quantity in the near future.

Some difficulty was met with in producing a proper ventilating current, but this was largely overcome by converting the open running fan into a closed chamber one. By strengthening and otherwise altering the structure of the fan its efficiency was largely increased. The speed was also greatly augmented and a fairly good current of air is now travelling the workings of the 2,500 lift. If the workings in the new sinking is to be pushed ahead there must be a different plan of ventilating the mine, as the quantity of air in the mine is inadequate to work the lower lift. I would advise strongly a fan for No. 2 slope.

The two tipples, shaking screens, and picking belt have also been installed. These will be run by a Leonard & Tilley engine, 9x10 inches. A McDougall engine, 7x12 inches, will run the creepers which are not yet in place.

The machine shop, fitted with laths, drill and all necessary tools, is run from the fan engine, which is of McDougall's make, 8x15 inches. The ventilating fan is 14x8 feet.

They have two 14x5x13 inches Jeansville sinking pumps, which were used in pumping the slope. They have one Jeansville duplex pump 16x6x18 inches, which they intend to install at once. They have also a new Northey pump which they intend placing at the 1,400 feet level, when sinking is completed. This mine has all appearance of being an up-to-date mine in the near future, and everything in and around the mine is carried on with neatness and despatch and reflects great credit to the management, taking into consideration the hazardous work they had to contend with.

VALE COLLIERY, PICTOU CO.

On account of so much idle time last year the extention of the mine was limited.

The north levels have been driven in 800 feet, and three new balances are being worked. In the sinking two parallel levels are being driven on each side of the dip, and three new balances are being worked. Further developements on the east level have been stopped for the present.

Active work has again been commenced on the west side and the intention is to fully develop this part of the field. At present the mine is double shifted and shows an increase in the output, but not enough to fill the demand. The mine is comparatively free from gas and thoroughly ventilated.

On the surface there has been no improvement. A new magazine has been built to replace the one that was blown up by the explosion of powder on the 23rd of August last, by which two young boys lost their lives.

MARSH COLLIERY, PICTOU CO.

This mine worked continuously during the year. The slopes are down a distance of 1,575 feet, and are still being driven. The levels referred to in my last report, turned off at 875 feet, are in a distance of 734 feet with two balances on each level.

No. 1 balance, west side, is driven up 310 feet, with 8 bords on it.

No. 2 balance, west, is up 220 feet, with 5 bords on it.

No. 1 east side, is driven up 365 feet, with 9 bords on it.

No. 2, east, is up 170 feet, with 4 bords on it.

New working levels have been turned off on west side of slope at a distance of 1,375 feet, making a working lift of 500 feet, and they are in a distance of 300 feet. A new balance is also starting on this level. A new 6 or 7 inch duplex Cameron pump was put in at second level to handle water making on these levels, also water making in sinking.

On the surface railway sidings are being extended, and the bankhead raised 6 feet, to make room for new screens which are being put in. A new office and magazine were built to replace those that were destroyed by an explosion of dynamite last January. The ventilation in this mine is very good, and everything in and around the mine is kept in very good order by the Manager, Mr. James W. McIntosh.

ALBION MINES, PICTOU CO.

THIRD SEAM.

The levels in this seam have been driven east and west from new bottom. The levels going east are in 23 chains from the slope bottom. The levels going west are 70 chains and 2 links from slope bottom.

There has also been a stone drift put through from this seam to the cage pit seam, 140 feet in length, which allows a section of pillar work to be started in the cage pit seam, which has increased the output considerably.

Owing to the condition of the mine in regard to scarcity of places and the great demand for coal, the mine is working double shift at present, but as there is a great scarcity of labor in all classes. The output has not increased to meet the demand, although it has been increased from 400 tons to 600 tons.

McGREGOR PIT.

There has been no work done in this seam except driving a pipe head.

A new Jeansville pump is to be put in. Its dimensions are 18 by 27 and 44 by 9 by 36 inch triple expansion condensing outside, fitted with a special 6 inch Wyoming eliminator, also a steam trap and a 10x12x18 inch duplex condenser.

A special column pipe, 10 inches in diameter, has been imported for this pump, 5,000 feet in length, 2,000 feet tested to a pressure of 800 lbs per square inch, and 1,500 feet tested at 500 lbs., 1,500 feet tested at 325 lbs. A new 8 inch steam line has also been installed, and it was necessary to change all pipe lines at present in use, owing to the pressure having to be increased from 80 to 115 lbs., which made necessary the changing of about 12,000 feet of pipe line.

This pump, when in operation, will have a head of 674 lbs. per square inch, and it is supposed to be the largest direct pump used in mining at present.

The excavation for the pump house is 63 feet long, 21 feet wide, 18 feet high, which will admit an overhead hoisting apparatus being put in to handle parts of pump. When this pump is in operation it will handle all the water made in the three seams and will displace 4 pumps at present used, also a boiler plant at the Ford pit.

The pump room will be supported by stone walls, with 12 inch I. beams for a roof. A bed of concrete 3 inches thick will be the pump foundation.

MINUDIE MINE, CUMBERLAND CO.

This seam of coal is opened by two slopes, situated 700 feet apart. The slope which has been full of water during the past six years is termed No. 1 slope, the other No. 2 slope.

No. 2 slope has been advanced another lift of 300 feet, driven 10 feet wide by full height of coal. Bords have been broken off at intervals of 35 feet apart on both sides of slope, and driven in a distance of 50 feet, where they are opened through to each other and worked on the longwall system.

Those going west are cut off by a fault rnnning at an angle of 24° across the slope. Those going east have been cut off by a balance driven from the level, and re-formed on opposite sides of balance. The east level is now in a distance of 400 feet, and the west is driven 250 feet from the slope.

No improvements of any importance have been made upon the surface at this slope, except building a carpenter's shop, and tool house and the installing of another boiler of 35 horse power.

NO. 1 SLOPE.

This slope has been pumped out and retimbered, and the 500 feet levels have been retimbered, and working places started away on the longwall system.

This slope has been sunk another lift of 300 feet, but no work has been opened up except the driving of a pipe slope. The water of this mine is pumped to the surface by a Northy duplex pump, size 6x10x12 inches,

On the surface considerable work has been done. The old engine house has been repaired, and two new 60 horse power return tubular boilers have been set in brick and a double cylinder engine of 75 horse power installed to handle the product of the mine.

A new bankhead, 90 feet long and 30 feet wide, with two screens, has been built, also a small office, blacksmith shop and a cottage for the manager.

The railway siding, about 700 yards long, has been relaid, and connected to the Joggins main line.

STRATHCONA COLLIERY.

This mine has worked continuously for the last year.

During this time they have sunk their slope a distance of about 375 feet, making the total length of this slope about 460 feet. The levels are turned off east and west at this point, and a few places are working to the rise. The coal is very good and improving in quality as they go down.

On the surface there is a new bankhouse, screens, engine house, carpenter shop, blacksmith shop, office and store house.

The hoisting from the mine is done by a donkey engine, and a horizontal boiler, placed on a solid foundation. In addition to the above buildings they have built a large boarding house, single house for under ground manager, and a barn. This mine is in first class condition and the ventilation is good.

JUBILEE MINE.

This mine did a considerable amount of work the first part of the year, but changing ownership early in the spring, during the summer no work was done, except keeping the mine clear of water. The management expects to do quite a business this coming year.

The amount of ventilation is inadequate on account of the air-courses being neglected, while the mine was kept clear of water pending negotiations for a sale of the property.

SCOTIA MINE.

The owners of this mine, Messrs. Ripley and Blenkhorn, are sinking a new lift. They are now down about 50 feet with their new sinking and expect to turn two levels off at 100 feet.

They have installed a new plant on the surface, a donkey engine, and one horizontal boiler, with a small Cameron pump for pumping water out of the mine. This is quite an improvement on the one horse engine they had before for hoisting coal out of their mine.

In a few months it is expected the output will be greatly augmented. Altogether matters are looking more favorable than they were at this time last year.

CHIGNECTO MINE.

As stated in my last report, this property changed hands in July, 1901, and it has been worked since under the name of the Maritime Coal Co.

The company started pumping out the old slope last October, and on the 27th of February, when 475 feet from the old surface, fire broke out from the old workings. They were unable to locate it, and consequently were obliged to close up the slope to smother the fire. They then started to open up the seam about one mile west of the works on the same property, and sunk two shafts to a depth of 50 feet and found a superior quality of coal. The top coal measured 5 feet 2 inches and the bottom coal 5 feet 2 inches, separated by 6 feet of fire clay. After the mine had been closed for two months, the management decided to open up the old slope, and found no trace or sign of fire. They started again to pump out the mine, closing off the old works with permanent stoppings outside of the upcast and downcast

They have now got the water out of the mine after considerable trouble, as there were some heavy falls which they have got cleaned up, and have got the slope timbered in good shape. Airways and travelling road on each side are cleaned out and timbered in good shape.

At the bottom of the slope, which is 600 feet deep, the top coal measures 3 feet 6 inches. The bottom coal measures 5 feet 6 inches, separated by 1 foot 3 inches of fire clay.

There is a third seam of good clean coal 2 feet 6 inches thick above what is termed the top coal, which has never been worked. It is separated from the top coal by 4 feet of fire clay.

They will commence sinking in a few days, as they have abandoned the new works for the present. The old slope is much the better location for railway access, and has a never failing supply of running water close to the bankhead sufficient for all purposes of the colliery. The company intends to sink continuously until they reach 1,400 feet from the surface.

They have repaired the manager's house, boarding houses and twenty-five tenement houses in first class shape. They have repaired the blacksmith shop, which is 20 feet by 60 feet, carpenter's shop, 20x38 feet, oil house, locomotive shed 181x60 feet, fan house 18x27 feet. The engine house, 40x49 feet, screens and picking table 40x43 feet, and bankhead 92x83 feet are connected and under one roof. This building has been repaired in first class shape and a new iron roof put on.

The boiler plant consists of two new steel tubular boilers, 60 inches by 14 feet, made by I. Matheson & Co., New Glasgow, and two steel shell boilers 3½ feet by 30 feet, which are kept in reserve.

They have installed a new Matheson double cylinder hoisting engine 16x30 inches, with two loose drums, 8 feet in diameter by 4½ feet, also a small double cylinder hoisting engine, 35 horse power, made by S Flory Manufacturing Co., Pa., which is used for hoisting temporarily.

Two stone drifts are projected in the McGregor seam and will be started as soon as practicable. They will connect the Third Seam, Cage pit seam and the Foord pit seam, which has been lying dormant for a number of years, and the coal will all be taken out of the McGregor slope. This should place this mine in the line of modern mines in regard to output.

Two new Sterling boilers have been added to the plant during the year, each of 200 horse power, and with a new feature in the shape of smoke stacks. The smoke stacks on these two boilers are 101 feet high from the ground floor, or 86 feet from smoke box at the top of boilers, and 39 inches in diameter. A new heater has also been put in to feed boilers with warm water instead of cold water as at present.

NO. 1 SLOPE, DRUMMOND COLLIERY.

The chief operations carried on during this year were on No. 13 lift.

Six balances were opened up and the extraction of coal vigorously continued. South side Nos. 1 and 3 balances were worked.

On No. 14 lift south, levels were advanced 1,300 feet, and Nos. 1, 2 and 3 balances driven. The north levels were worked to the boundary line, and Nos. 3, 4 and 5 balances cut through to lift above.

In the latter part of April the sinking of Nos. 1 and 2 slopes began and is now about completed. Levels will be driven north and south. To the deep the coal has much improved both in quality and height.

At No. 6 lift a start has been made to clean out the old level and mine bord to connect with a place driven from this lift to No. 4 slope.

Airways and returns have been enlarged, and under the management of Mr. Blue the ventilation has greatly increased, so much so that there is nearly double the quantity there was last year. These slopes are in good condition. During the year a new bankhead has been erected at Nos. 1 and 2 slopes, capable of handling 18 boxes per trip. Loaded boxes are delivered at the weigh scales, and after being unloaded by tipples, return by gravity to the brow ready to go down the slope.

NO. 4 SLOPE.

Below Findlay's incline a number of pillars were taken out and the roadway extended to No. 6 lift of main seam. Several large blocks of coal were removed both east and west of slants, to rise of Findlay's incline, and all coals from upper lifts worked out.

Several places are now driving east of slants to the rise.

A 200 H. P. Hiene water tube boiler, which supplies power for hoisting and pumping has been installed at this mine. The electric light plant, installed late in 1901, is giving good results, a large number of lights are now in use. A 1,200 C. P. arc lamp is placed at the entrance to the slope.

One of the coalpicking belts has been remodelled with an extensive travelling jib, which is a great improvement compared with the stationary. It is so arranged that the coal is delivered into the cars without any chutes, thus materially reducing breakage of coal.

At No. 2 slope two hoisting drums, with gear wheels complete, have been erected, replacing single driving and friction wheels.

ACADIA MINES, WESTVILLE, PICTOU CO.

During the past year coal has been steadily worked outward in No. 10 lift.

About 1,150 feet on the south side of main slope, No. 3 jig, has been driven up to No. 3 lift, and the coal is being withdrawn at the top. No. 2 jig, about 750 feet from the slope, is driven up 85 feet.

This leaves on the south side of No. 10 lift, No. 1 still to be driven, and No. 2 finished before pillars can be taken out.

The pillars are being taken out in No 3, 4, 6 and 7. No. 5 jig is worked down to within 70 feet of the No. 10 level, and is stopped for the present.

On the north side it is worked with shoots. No. 1 chute is driven 90 feet and has nearly 200 feet more to go. Pillars are being withdrawn rapidly in No. 2 and 3 shoots. Inside there are 400 feet of level pillars being worked and about three quarters have been taken out.

No. 11 lift has been sunk about 380 feet, and the south levels are driven in a little over 600 feet. The north levels are in about 180 feet. In sinking, a fault, about 25 feet thick, was struck 290 feet down from No. 10 lift.

The top levels were turned away 30 feet below the fault, and the north top level is in the same fault at present. The course of which is about north and south.

An airway has been started above the fault going north to strike the travelling slope when it is driven up.

A new bankhead is being erected to facilitate the banking of the coal, as present arrangements are found inadequate. The ventilation throughout the mine is fair, but owing to the great depth and the difficulty of maintaining airways of any size, a new fan of increased capacity is a necessity in the near future.

I beg to enclose tables showing amounts of air measured, accidents and causes. In conclusion I must say that the "Coal Mines Regulation Act" has been very fairly observed through the various mines in my district.

I remain your obedient servant,

A. V. CAMERON,
Deputy Inspector of Mines.

Amount of Air Per Minute Circulating in Mines each Month.

NAME.	COUNTY.	1901.			1902.								
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.
Springhill No. 2	Cumberland	78000	79000	79200	78000	78500	77000	75000	74000	72000	72000	73000	74000
Springhill No. 3	"	70000	71000	75000	78000	79000	77000	76000	75000	73400	73500	74000	75000
Joggins No. 2	"	8000	8500	8200	9000	9200	9400	8000	8550	11130	12000	13000	14000
Joggins No. 3	"	7000	5000	7550	Idle.	Idle.	6000	6880	7000	6280	6000	6880	6750
River Hibbert	"	11000	12000	14000	14400	14000	15000	14000	13000	12000	12480	14220	14000
Jubilee Mine	"	1200	1300	13450	Idle.	800	900	Idle.	Idle.	Idle.	Idle.	Idle.	2000
Chignecto	"	Idle.	Idle.	Idle.	......	......	......	......	......	......	......	......	......
Scotia	"	2000	2240	2000	2500	2400	2300	Idle.	Idle.	Idle.	3000	3220	3250
Strathcona	"	10000	12000	11000	9000	12000	13000	11400	10550	9580	11540	13000	14000
Drummond Slope	Pictou	30000	40000	40400	41500	48000	48200	47000	47200	49000	50000	55000	60000
No. 4 Slope	"	21000	21200	20000	21000	20200	21000	20150	20000	20200	21000	21180	21000
Acadia Mine	"	27000	26000	28000	29000	28000	27000	25000	25120	24000	25000	26000	28000
Albion 3rd Seam	"	69000	70000	72000	71000	74000	75000	75480	77000	76800	77240	76000	77400
Vale Colliery	"	38000	37000	37400	36000	35000	35450	34000	34480	33000	36000	37150	37250
Marsh Mine	"	8750	8900	7480	9450	8880	8120	8000	8500	8450	8770	8780	8850

Monthly visits during the year ending 30th September, 1902.

MINE.	1901.			1902.								
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.
Springhill No. 2	22	24	23	25	24	27	22	23	21	21	22	24
" No. 3	23	25	21	28	22	29	25	24	23	22	27	25
Joggins Mines No. 2	16	17	19	15	19	20	17	14	17	16	19	17
" No. 3	16	17	19	15	18	20	17	14	17	16	19	17
Minudie Mines	15	18	19	16	17	20	16	13	18	15	19	17
Strathcona	15	18	18	16	17	21	16	13	18	15	18	16
Jubilee	15	19	18	14	17-20	14	16	13	18	15	18	16
Scotia Mine	17	19	14	14	17	14	15	12	17	15	19	10
Chignecto	17	18	14	14	19	14	15	12	17	15	19	10
Drummond Mine	7	12	11	8	4	4	4	5	3	8	5	2
Drummond No. 4	8	13	12	9	5	5	5	6	3	9	6	3
Acadia	8	12	11	9	5	7	8	8	6	9	6	3
Albion Mines	9	13	12	10	6 11	5	5	6	4	11	8	5
Vale Colliery	10	14	10	11	7	6	7	7	5	10	7	4
Marsh Mines	10	14	10	11	7	6	7	7	5	10	7	4
Cape d'Or C. Mine	......	......	......	......	......	......	......	15	......	......	......	......
Wentworth	......	......	......	......	......	......	......	......	24	14	......	......

Accidents during the year.

No	Date.	Mine.	Name.	Occupation.	Remarks.
1	Oct. 22.	No 3 slope, Spr'hill.	Roy Hyatt.	Oiler.	Arm broken, jammed between boxes.
2	" 11.	Jubilee, Maccan	Wm. Long.	Carpenter.	Killed by bankhead under construction falling on him.
3	" 11.	" "	Elvin Long.	"	Slightly by falling of bankhead.
4	" 11.	" "	John Hurley.	Laborer.	" " "
5	" 17.	Intercol: Colliery.	John McNeil.	Boy.	Leg fractured by being jammed between boxes.
6	Nov. 8.	No. 2 slope, Spr'hill.	Jonathan Patterson.	Laborer.	Collar bone broken by a slide of coal.
7	" 20.	Albion Mine.	John McLean.	"	Jammed between cars on surface & died 22nd.
8	Dec. 5.	" "	Henry Flynn.	"	Caught under cage injuring ankle joint.
9	" 6.	Marsh Mine.	Joseph Allen.	Miner.	Two ribs broken.
10	" 30.	Joggins Mines.	Hugh McEachren.	Miner.	Leg broken above ankle by a fall of coal.
11	Jan 29.	Marsh Mine.	J. W. Sutherland.	Manager.	Killed by an explosion of dynamite in office.
12	" 29.	W. Marsh Mine.	W. Sutherland.	U. G. M.	" " " "
13	" 29.	Marsh Mine.	John Wilks.	M. Foreman.	" " " "
14	May 24.	Springhill.	Wm. LeBeouf.	Laborer.	Fell from high tressel, leg broken.
15	" 17.	Intercol: Colliery.	Peter Graham.	Boy.	Compound fracture of leg, caught in creeper.
16	Aug. 18.	"	Joseph Turner.	Miner.	Leg cut off by runaway rake.
17	" 18.	"	Thos. O'Brien.	Boy.	Arm fractured at wrist.
18	" 25.	Acadia Mine.	Clarence Flemming.	"	Leg broken, drove against door.

19	“ 23.	Vale Colliery.	C. McNulty.	“	Killed by powder explosion.
20	“ 23.	“ “	F. McDonald.	“	“ “ “
21	July 11.	Intercol : Colliery.	Piers Murphy.	“	Leg broken at ankle attempting to jump on rake
22	Aug. 14.	“	A. McNeil.	Miner.	Slightly injured by a lump of coal falling from face.
23	May 2.	Joggins Mines.	Wm. Fornan.	Stableman.	Burnt slightly by gas.
24	April 21.	Albion Mines.	F. Vachreese.	Miner.	Seriously injured by a fall of coal.
25	“ 17.	No. 2, Springhill.	John J. Wilson.	Driver.	Leg broken by a full rake.
26	“ 14.	“ “	E. Sweet.	Loader.	Fatally, falling down chute.
27	Feb. 8.	Albion Mines.	James Purvis.	Shiftman.	Killed by a fall of top coal.
28	June 3.	No. 2 slope, Spr'hill.	S Bunton.	Miner.	Leg broken by a fall of stone from roof.
29	May 27.	Joggins Mines.	John Murphy.	Boy.	Leg broken.
30	Sept. 15.	Acadia Mines.	T. Robinson.	Miner.	Leg broken by lump of coal.
31	June 12.	No. 3, Springhill	P. Burns.	R. cleaner.	Killed by passing rake.

CAPE BRETON COUNTY.

The sales from this county aggregated 2,924,967 tons against 2,260,955 tons in 1901. The production of the Dominion Coal Company was 2,952,758 tons, compared with 2,352,567 tons in 1901.

The sales in Nova Scotia again show a large increase, being 982,708 tons against 631,135 tons in 1901 and 469,258 tons in 1900.

The Dominion No. 2 colliery of the Dominion Coal Company, is now getting fairly under way.

The Nova Scotia Steel and Coal Company are vigorously continuing their new openings, and should trade demands warrant, their output next year can be decidedly increased.

I append the report of P. Neville, Esq., Deputy Inspector for the Island of Cape Breton.

E. GILPIN, JUNIOR, ESQ.,
Deputy Commissioner and Inspector of Mines.

DEAR SIR,—I beg leave respectfully to submit my report to you on the coal mines in Cape Breton for the year ending September 30th, 1902.

GOWRIE AND BLOCK HOUSE COLLIERY.

Work has been carried on at this mine during the year. The levels are being pushed rapidly forward by three eight hour shifts, and are now in 2,000 feet, where the coal continues to hold its superior quality. The levels have been narrowed down to 10 feet wide instead of 12 feet, while the rooms to the rise are now driven only 20 feet wide in place of 25, as formerly. A tunnel has been driven connecting with the air shaft mentioned in my last report. The ventilation has been greatly improved since this tunnel was put through. The air goes down through the new shaft and returns through the hoisting shaft, where it is assisted by the exhaust steam from the pumps. A double bottom and bankhead have been put in operation, which much facilitates the handling of the coal. Much improvement has been made in the surface arrangements, and surface drainage secured. A Hudson economizer has been installed, which entirely does away with lack of suitable water for boiler purposes. A survey connecting the surface with the underground workings has just been completed. Plans are now being made to install at once mechanical haulage in the levels. Picking belts and shaking screens are being put in.

The average amount of air per minute passing through this colliery is 14,000 cubic feet.

The number of visits made by me during the year was twelve.

CALEDONIA.

Caledonia has worked steadily during the year. No. 2 west deeps have been stopped at a distance of about 3,000 feet, in order that a larger area of coal be left for No. 3 colliery on the east side of that mine. However, the deeps are being driven in a more eastwardly direction, where the coal looks well and the roof good as they advance. Also on the east side of the pit the deeps have been steadily advanced, and new sections are being opened out, the coal and roof also improving.

Towards the rise both on the east and west side of the deeps where the rooms are finished, the pillars are being drawn very successfully. Owing to the extraction of pillars large quantities of water get through the broken roof, together with the water from Dominion No. 3, which is successfully handled by the self-dumping tanks in the water shaft. Ten of Jones' underfeed stokers have been erected in the boiler room and are giving good results in saving of fuel and labor.

The average amount of air circulating through this pit is about 85,000 cubic feet per minute. More can be had if required, as the fans are capable of giving more than three times that quantity. I have visited this colliery fifteen times during the year.

DOMINION NO. 2.

Work at this mine has been briskly carried on during the year.

PHALEN SEAM.

North and south levels have been driven 1,000 feet. At this point the main headways for the motor engines are driven. Deeps are also being driven from this point. Temporary headways have been driven 1,500 feet above the pit bottom and rooms driven off north and south. A lodgment was driven 800 feet below the pit bottom and a number of places driven off north and south, 200 feet each, for water space. Approaching the lodgment is a water tunnel driven 450 feet, which will terminate at 600 feet. An air tunnel is also driven a distance of 300 feet, and it is now within 10 feet of being through into the coal. Those two tunnels will be timbered skin tight with hard pine, as the roof is shaky and there is a great pressure. The pillar on the high side of the shaft is 400 feet thick and 1,000 feet long, with a few 10 feet places driven through. Above this were first left the room pillars 35 feet. Afterwards it was considered advisable to increase to 45 feet, and also as the rooms are broken off, going to the dip that a further increase of 5 feet be added to every 100 feet.

The average amount of air passing through this pit is 170,000 cubic feet per minute.

HARBOR SEAM.

North levels were driven 384 feet. At this point they were turned up towards the International pit and driven 924 feet and are now within 300 feet of being through. The intention is to have a barrier and bore through. A pair of north headways were driven 1,200 feet, and a pair of south headways driven 1,070 feet. A pair of south levels have been driven 1,568 feet, and a pair of south deeps 1,160 feet. and a pair of north deeps 509 feet to date. Size of pillars in this pit or seam is 30 and 35 feet.

Amount of air passing through those workings is 75,000 cubic feet per minute.

SURFACE.

One steel tower has been erected over man and water shaft—height 85 feet. One steel bankhead, now in course of erection over main shaft, which included two screen houses, picking belts, &c., which will operate both seams of coal. Height of pulley centres 132 feet. One steel water hoist and fan engine house has been erected, size 49x47x26 feet post, to which is joined the second fan engine house, size 35x13x10 feet post. One Phalen and Harbor hoisting engine house 48x64x28 feet post. One steel boiler house in course of erection, size at present 82x99x24 feet post. One building of offices, wood frame with expanded metal covering, size 40x20x12 feet post.

This colliery I visited eighteen times during the year.

INTERNATIONAL MINE.

Two new bore holes, 12 inches in diameter, have been put down at pumping station from surface, a depth of 305 feet, one being used for steam and the other for water. No. 11 landing, consisting of 25 working places, which was drowned out for seven months, was again won in May last. A deep has been started off at the face of No. 11 level and driven a distance of 600 feet. This is to connect into a level driven from No. 2 colliery, and will be used as a waterway through which the water from International will pass through to No. 2 water shaft, to be raised from that colliery by tanks. The distance yet to be driven, at this date, to connect the two collieries is 300 feet. A new section of pillars is being drawn very successfully and the coal taken to the shaft by main and tail rope system of haulage.

Average amount of air ventilating this colliery is 70,000 cubic feet per minute. I visited this mine eleven times during the year.

DOMINION NO. 3.

The main slopes have been driven down during the year 1,000 feet, and four levels on each side, east and west, driven off. Rooms have been driven off those levels on the pillar and room system opening up eight sections. As the rooms are worked to the rise and boundary in each section the pillars are then drawn back successfully, very little coal being lost. The sinking and deep coal is hauled by a trip engine to the landing, where it is handled by the endless haulage. Care is taken that the barriers between this mine, Caledonia and the Reserve are not pierced at any points except by the waterpipe passing the water through to Caledonia.

On the surface there has been one new Babcock and Wilcox boiler, 137 horse power, installed. The surface is well equipped with a first class water system. Along with this there are five patent fire extinguishers placed in the most important stations. The mine is also equipped with a telephone system, taking the important stations from the face of the main slope to the Manager's house. The output at this mine has increased to about 1,900 tons daily.

The average amount of air passing through this mine is 42,000 cubic feet per minute.

I visited this mine 13 times during the year.

RESERVE.

This mine has worked in its usual steady way during the year. French slope has been driven 450 feet and levels turned off. The main haulage road in this slope has been extended 750 feet and the south level driven 1,000 feet, north level driven 700 feet and No. 4 south level driven 1,000 feet and connected in east slope. The east slope has been driven down 700 feet, where levels have been driven off and rooms opened. Two haulage engines have been placed in the east and French slopes. One thousand feet of 6 inch air pipe has been extended in French slope, and 450 feet of 8 inch in east slope. In the main or west slope the greater part of the mining done was in the extracting of pillars, which is going on very satisfactorily. Timbering in this pit is well attended to, and the travelling roads kept in fine order. The new fan, mentioned in last year's report, has been put in operation It is 24 feet in diameter and 6 feet face, capable of giving 275,000 cubic feet of air per minute for 100 revolutions. One cannon pump (steam), 12 inches, 2 feet stroke, 7 inch plunger has been placed in the pit.

Ventilation in this mine averages 250,000 cubic feet per minute.

This mine I visited thirteen times during the year.

DOMINION NO. 1.

Levels and rooms have been driven in the ordinary course of working. A new lift of 1,000 feet has been put through in south deep, gaining two new landings to make up for landings, which are finished at the top of this deep. Pillars are being successfully drawn on No. 3 and No. 5 landings, south side, and also on No. 6 landing, north side. A new lodgment is finished at the bottom of south deep, capable of holding one million gallons of water, and a large pump is in place at that point to pump through the bore-hole into International water level, whence the water runs to the sea. This pumping station will partially drain Reserve colliery. Also a new fan and engine of the same dimensions as that at Dominion No. 2, and built by Dickson Co., Scranton, has been erected during the year, and a fire proof building put over it which building also extends over dynamo and engine.

A new endless haulage plant has been erected during the year on the surface, a new feature of which is two grooved pulleys, on the engine instead of the old bull wheel with lagging on it. Thus there is no wear on the rope, due to the slipping over on the bull wheel and the three ropes being on the same engine. The endless haulage is now concentrated in one place. This plant is also covered with a fire proof building.

A telephone system is being put in connecting all the sections of the mine with pit bottom, engine houses, colliery office and Manager's house.

Connections have been made so that the air pipes in any part of the mine can be filled with water by the fire pump to use in case of fire.

The following shows distances from shaft to faces of deeps and levels:—

South deep, dist. from shaft to face	6,000	feet.
No. 5 level, dist. from Deep to Reserve barrier	2,300	"
No. 6 level, dist. from Deep to Reserve barrier	1,600	"
No. 8 level, dist. from Deep to Reserve barrier	400	"
North deep, dist. from shaft to face	6,000	"
No. 6 level, dist. from North deep to Angle deep	3,000	"
No. 7 level, dist. from North deep to Angle deep	3,300	"
No. 8 level, dist. from North deep to face	3,700	"
No. 9 level, dist. from North deep to face	600	"
Angle deep, dist. from shaft to face	3,150	"
No. 5 level, dist. from deep to shore barrier	1,000	"
No. 6 level, dist. from deep to shore barrier	500	"

Average ventilation in this mine is 112,000 cubic feet per minute.

Number of visits made by me during the year was thirteen.

NOVA SCOTIA STEEL & COAL CO.

SYDNEY MINES.

During this year at Sydney Mines the N. S. Steel & Coal Co. purchased 100 16 ton cars. Owing to the bankhead of Princess pit being only high enough for the loading of six ton cars, it was found that instead of raising the bankhead to the required height to load coal into the new cars, it would be better to have a picking belt and elevator placed at right angles with the present screens, and the coal was raised to a point where it could either be loaded into the large cars or in winter time could be loaded into smaller cars or be banked on the bank floor. This has been done and is giving complete satisfaction. The picking belt and elevator are driven by a system of rope gearing from the engine which operates the wash plant. They have also installed a Jeansville pump at the bottom of the water shaft in Princess pit, to force the water up the shaft and to allow the Cornish pump to remain idle, except necessity should require in the future; this pump will be operated about once a week, so that should any accident occur to the shaft or force pump, this Cornish pump would always be in readiness.

The new pump is a Duplex, compound in the steam end, and the following are the sizes thereof:

Cylinders 15 and 28 inch by 8½ inch plunger by 24 inch stroke, outside packed and connected with one 8x12x12 inch single condenser, including one 4 inch Wyoming eliminator. This pump is guaranteed to pump 600 gallons (Imperial) per minute, under 720 feet head with 75 lbs of steam.

Owing to the amount of haulage in the Princess pit, and to the fact that the engine is now drawing from the south, from a point at which the present system is not profitable to the company, and as they have a mile or more to go before reaching their boundary, it has been decided to replace the present haulage by an endless haulage system which is to be put in during the coming winter.

The south deeps have been extended and new lifts gained. Pillars on both sides of the upper sections of south deep have been drawn steadily during the year. The long wall on the north side, that has been carried on for a number of years past has been discontinued, and the coal in that section is to be worked on the pillar and room system. A road has been laid from the bottom of the Princess pit up to the Queen pit in order to extract a large number of pillars that are there in excellent order with the roof in good condition. The coal is brought to the pit bottom from this district by tail rope system of haulage.

The company has also opened up three slopes on the Lloyd's Cove seam, which overlies the main seam. At a distance of about 350 yards northwest of the Princess pit, they are at present driven down 1,300 feet, and the coal is giving entire satisfaction, so much so, that they have erected a bankhead at right angles with the main line, and are erecting a haulage engine in the immediate vicinity of the boilers at Princess pit, and propose drawing coal from what is known as Sydney No. 2, in the Lloyd's Cove seam, from the interior of the mine to this bankhead to have the coal prepared previous to putting into cars, thus obviating the building of a branch line from the main line to No 2. This also will be operated by endless haulage, and the same pair of engines that are being placed to operate this endless haulage in No. 2 will also operate the endless haulage in the Princess pit, thereby obviating the carrying of steam down the shaft as heretofore.

They are also preparing to erect a large. Walker compressor, for the purpose of running mining machines in the No. 2 colliery. This, with a fan and engine, will be placed close to the high pressure boilers at Princess pit. With this object in view an air shaft is being sunk into the Lloyd's Cove works to enable them to ventilate No. 2 mine. All of these are at present under construction.

The company has also opened a new colliery known as Sydney No. 3, on what is called the Cox farm, on the north side of Big Pond. This colliery is opened on what is known as the main seam, by three slopes driven down on the pitch of the seam from the crop. By these slopes they propose operating a large tract of coal under the land in addition to that which they can win from their water area.

The average amount of air circulating through the Princess pit is 100,000 cubic feet per minute, and through the Loyd's Cove seam 6,000 feet per minute.

I visited these operations thirteen times during the year.

SYDNEY COAL COMPANY.

A few men have been employed during the year at this colliery, mining and getting out coal. The levels have been extended and rooms driven off towards the rise as usual. The shaft, that has been sunk at the top of the travelling road for the workmen to go to and from their work, has been sunk on Mrs. Barrington's land, and it appears she is not willing that it shall be in use for that purpose unless the company pays for the land. On the other hand the company claims that she is charging too much. So it is yet unsettled. This is very unfortunate for the workmen, as there is no other travelling road for them to go by, except the haulage road, and that is dangerous to travel by when in motion. The timbering in this pit throughout is well attended to.

The average amount of air passing through this colliery is about 6,000 cubic feet per minute.

I visited this colliery 12 times during the year.

BROAD COVE.

The slopes during the year have been driven a distance of 300 feet. There is 50 feet more to be driven, when levels will be turned off, gaining another lift. A pair of levels on the east side have been driven 962 feet, which brings them within a short distance of high water mark. It was found advisable to discontinue driving those levels as at the face they were getting wet. Concrete dams have been put in close to the face which holds the leakage back. Two new balances have also been driven on this level.

A new Cameron pump 9x18x20 inches has been placed below No. 2 level, which takes the place of four small pumps, and does the work with better satisfaction. A line of larger pipes was also put in to suit this pump. A new 18 feet fan has been ordered to take the place of the small fan now in use, as more air will be required as the mine is opened out.

On the surface another new boiler has been erected, which makes a battery of two Babcock and Wilcox. Forty new double dwelling houses are nearly completed.

The new pier at Port Hastings is about completed. It is to have a pocket capacity of from 3,000 to 4,000 tons, and is equipped with all the latest improvements for shipping coal.

The average amount of air circulating through this mine is 18,500 cubic feet per minute.

The number of visits made during the year was ten.

Mabou Coal Mine.

Developements have been pushed ahead vigorously during the year. Trial pits have been sunk and the positions of the seams fairly located. The slope on the 7 feet seam has been driven down a distance of 380 feet, where the coal has greatly improved in appearance. The angle of the dip, that this slope is driven on, is 40 degrees. It is well timbered. If the slope holds this angle it is likely that the covering at tide level will be 200 feet. The true dip of this seam is 65 degrees. A new slope has been started on what is called the 15 feet or big seam. This slope has been driven a distance of 400 feet. It is also well timbered, being 6 feet 4 inches in height and 9 feet wide. The angle that this slope is driven on is 35 degrees, while the true dip is about 80 degrees. This seam is underlying the 7 feet seam and nearer the upheavel, therefore having a higher pitch. The quality of the coal at the bottom of this seam also looks much better than any taken from the seam higher up. Ventilation is helped in those slopes by openings from the old works. Improvements have also been made on the surface plant. Two horizontal return tubular boilers of 70 horse power, also a vertical boiler of 25 horse power, and a small hoist of about 40 horse power, and two small pumps for sinking have been put in place.

There are now three double tenement houses at the mine and one single and a large boarding house 108x26 feet, two stories high. There is a boiler house, office and workshop, wash house and store house, all completed.

A railway from the mine to a shipping wharf, a distance of $4\frac{1}{2}$ miles, is all graded and ready for rails. The shipping wharf is well under construction, and a large office built near by $77\frac{1}{2}$x$55\frac{1}{2}$ feet, finished with best material.

The ventilation is about 3,000 cubic feet per minute.

This colliery I visited six times during the year.

PORT HOOD MINE.

The slopes have been sunk about 500 feet since last report, and at 400 feet a pair of levels have been driven off on both sides about 350 feet, and two balances driven on each side of the slopes. This gives a new lift. On the upper, or 1,000 feet lift, the levels are being steadily advanced and the balances driven up and rooms driven off. The coal looks much better in the bottom lift.

The company is building 25 cottages for miners; they are about completed. The wharf extension is also completed, and the company is now in a position to load large tonnage.

The average amount of air going through this mine is 34,000 cubic feet per minute.

I made 9 visits to this mine during the year.

NEW CAMPBELLTON.

There is no new feature to be noticed since my last report. Deeps have been extended and levels and rooms driven off. The ventilation and timbering is good, making the mine safe. No accidents of any kind have occurred here.

The average amount of air per minute circulating through this mine is 32,000 cubic feet.

I visited this colliery 9 times during the year.

In conclusion, I may here say that the mines all through Cape Breton are kept in good order, ventilation good, and travelling roads in good condition. In general the requirements of the Coal Mines Regulation Act are willingly carried out.

However, when it is considered that the greater part of the Cape Breton coal is undermined by machinery, blasted down by powder and then, I may say, filled into boxes by unskilled labor, and that these laborers, as soon as they get to know how to load coal and something about the pit, are taken away and fresh men put in their place, it can be seen that there is great liability to accident.

You will notice by the table showing the accidents, that one occurred on the surface at Sydney Mines. The name was McIntire. He was stepping over a belt connected with the elevator and was caught by a revolving shaft and wheel. Another death occured at Dominion No. 1. McPherson was on the top of the cage with another man examining the shaft, when he took a fainting fit and fell, striking his head against the side of the wall stone of the shaft while the cage was in motion. It was not known until after his death that he was subjected to fits.

There has been some prospecting done in Inverness County for coal during part of the year, but I did not hear of any workable seam having been discovered. Prospecting has been going on in Richmond County with the same results. Prospecting has been carried on for some time and is still being continued on the Mira Road, but I have not heard of a workable seam having been struck. It was reported the Reverend Mr. Murray opened a four and a half feet seam at Black Brook. I went there, as you directed, to see it. It happened at the time that the little pit was full of water, so I did not see the seam, but the coal that was taken out of it looked well.

Messrs. McVey, Burchell and Hickey did some prospecting at the head of Lingan Bay, and struck a seam of coal there. It is traced by bore holes and trial pits for about a mile west of Lingan Bay. Two trial pits were sunk on the seam, one to a depth of 45 feet, and the other to a depth of 30 feet. The coal was found in both these pits to be 4 feet 5 inches thick of fine looking coal, with a parting in the middle of 2 inches of black slate and a fire clay bottom.

I have the honor to be your obedient servant,

P. NEVILLE,
Deputy Inspector of Mines.

Accidents in Cape Breton Coal Mines year ending September 30th, 1902.

DATE.	MINE.	NAME.	AGE.	OCCUPATION.	REMARKS.
Dec. 13, 1901.	Dominion No. 1..	Mick. McDougall...	30	Loader	Slightly burned by gas.
" "	" " ..	Jos. Dunn............	49	"	" " "
Dec. 18, 1901.	" " ..	D. J. McPherson...	45	Carpenter	Killed while examining shaft on top of cage when cage was in motion.
Jan. 4, 1902.	Dominion No. 3..	Joseph Gillis.........	23	Machine helper.	Leg fractured by fall loose coal.
Feb. 1, "	Caledonia	D. M. Morrison.....	18	Driver	Slightly singed by gas.
Feb. 8, "	Dominion No. 3..	Giovana Morando...	23	Loader	Scalp injured, one rib fractured by fall of stone.
Feb. 10, "	Caledonia	Dan. McDonald.....	50	Shot firer	Slightly burned by gas from top of a fall.
" "	"	John Fortune........	25	Miner	Seriously burned by gas; died ten days after.
" "	"	Dan. Quinn	22	Loader	Slightly burned by gas.
" "	"	Alex. Campbell.....	23	"	" " "
April 4, "	International	Charles Strang......	26	On-putter	Wrist broken; caught between two coal boxes.
April 26, "	N. S. S. & C. Co..	Nicholas McGimy...	33	Miner	Seriously hurt; two ribs broken by fall of stone from roof.

May 10,	"	N. S. S. & C. Co..	Phillip McIntyre...	26	Oiler..............	Seriously injured on surface; caught by cog-wheels.
May 19,	"	Port Hood	A. R. McLellan.....	32	Pit manager.....	Slightly burned by gas, which was in cross-cut.
June 2,	"	Dominion No. 2..	Elia Porter..........	32	Loader	Killed by fall of stone from roof.
June 6,	"	N. S. S. & C. Co..	Harry McGowan...	50	Miner	Killed by fall of stone from roof
June 13,	"	" " ..	David Williams.....	28	Driver	Leg broken by piece of stone from roof.
June 14,	"	Caledonia	Phillip McDonald...	21	Loader	Leg broken by piece of coal falling.
June 28,	"	Dominion No. 2..	Robert Parr..........	40	Shaft man	Killed; fell back in shaft from surface.
July 4,	"	Reserve	Don. O. Hanley.....	20	Laborer..........	Killed by runaway full box in slope.
July 9,	"	Caledonia	Jacob Frost..........	23	Loader	Killed by fall of coal rolling on him.
July 26,	"	N. S. S. & C. Co..	George Dorsey......	18	Trip runner.....	Collar bone broken by coal box capsizing.
July 28,	"	Port Hood.........	Hugh Beaton........	21	On-putter	Leg broken; caught between coal boxes.
July 30,	"	Caledonia	John Y. McDonald.	20	Miner	Killed by fall of coal from face.
Sept. 9,	"	Hbr. Seam No. 2.	Bart Finlay.........	20	Laborer..........	Killed by fall of stone from roof.
Sept. 20,	"	Broad Cove.......	Angus Kennedy.....	18	"	Killed; run over by back balance rope-brake.
Sept. 24,	"	Reserve	James Power........	23	Loader	Killed by fall of coal; hung shot.
Sept. 24,	"	Dominion No. 1..	Sam. Deveau........	25	On-putter	Injured across hips; caught between coal box and pillar.

COAL MISCELLANEOUS.

Progress has been made in the development of the coal resources of Inverness County. At Broad Cove development has reached a state permitting of regular shipments over the Inverness Railway & Coal Company's road to a very fine pocket pier at Port Hastings.

At Mabou, the Mabou Coal Co. have continued their slope sinkings, and so far as they have been extended the value of the property has been largely increased. This company is completing a road about six miles long, from the mine to a shipping place in Mabou Harbor, and will, it is expected, continue the road to a junction with the Intercolonial Railway at Orangedale.

At Port Hood, the colliery of the Port Hood Coal Company is working regularly and has made considerable shipments.

In Cape Breton County, on one of the Murray leases, the discovery is reported near the Cochran Lake seam of a new seam, 4 feet 6 inches thick. This should underlie many square miles of territory.

The development of the submarine areas of the Gowrie and Block House Co. has been steadily continued. Boring and searching for coal has been carried on at a number of points, but it is understood that nothing new can be reported.

The Government drills were kept continually in use. A memo. from Mr. D. W. Weatherbe, of the work accomplished by these drills, will be found as an appendix to this report.

GOLD.

The returns for the year 1902 show that 28,279 ounces were obtained as compared with 30,537 ounces produced during the preceding year. I give a report of visits made to the mines during the year. I may add that copies are being made of the plans of the principal mines for filing in the Mines office.

REPORT ON THE NOVA SCOTIA GOLD MINES.

FOR YEAR ENDING SEPTEMBER 30, 1902.

HALIFAX, NOV. 21, 1902.

TO DR. E. GILPIN,

Deputy Commissioner and Chief Inspector of Mines :—

SIR,—In handing in the annexed report on the gold mines of the Province for the fiscal year ending September 30th, 1902, I would respectfully suggest that the optional clause in the Mines Regulation Act referring to plans of these mines being kept, be enforced in cases where the Department deems it necessary. At least one case during the past season was brought to my notice where water from old and unknown workings broke into a new mine and drove the workmen out; and though in this case, fortunately, no fatality occurred, several lives might have been lost under slightly changed conditions.

Setting apart the actual danger incurred, hundreds, probably thousands, of dollars might be saved annually in plants and in the pumping of old mines in order to ascertain the underground conditions.

A few simple but explicit rules covering the use of explosives might also be advantageously put in force.

Though possibly fewer mines are being worked in the Province than last season preparations are being made in several districts for developments on a larger scale, both on the surface and underground.

Notably among those localities might be mentioned :—

Dolliver's Mountain, Ecum Secum, Wine Harbor, Sherbrooke, Caribou and Leipsigate.

I am,

Yours obediently,

D'ARCY WEATHERBE,

Mines Department.

Halifax, N. S., November 17th, 1902.

GOLD RIVER.

Old Lincoln property, Aug. 15, 1902.—P. H. Moore has a few men at work on the "Captain" lead, fitting up the plant preparatory to pumping out the "Captain" shaft which is about 240 feet deep.

The property contains a 10 stamp mill with ore bins and automatic feed. There is in the building a boiler, mill engine and steam hoist. It is understood that this property, which stands in the name of Alice H. Robinson, is held under option by the above.

North Star Mine.—A. Heisler is working on the property of T. N. Baker, and expects shortly to sink a new shaft.

BLOCKHOUSE.

Aug. 15, 1902.—Work was stopped here in March, 1902.

MOUNT UNIACKE.

West Lake property, Aug. 15, 1902.—Work at this mine has steadily progressed under the direction of J. A. Crease, one of the owners. D. Patriquin is foreman, and 8 men are employed.

Connection has been made from what was termed the "main shaft" last year with an old shaft 85 feet to the east, which has been sunk to a depth of 120 feet. The old main shaft is 110 feet in depth, and is some 60 feet east of the "west shaft," which is 85 feet deep.

All the ground on the main lead has been stoped between the three shafts, and to a distance of 250 feet west of the west shaft.

At this west face on the 75 feet level, the quartz measures about 7 inches. A pinch occurs, commencing at the surface, near the west shaft, and following a line pitching to the west at a low angle roughly parallel to the grooves on the wall, mentioned in my last report. (See report for 1901.)

At a point 25 feet west of the east shaft and at a depth of 65 or 70 feet, a roll or shoot of ore was encountered about 5 feet in thickness, and 10 feet high, and pitching easterly. The ore in this "shoot" apparently fills a fissure lying close to the main lead, though dipping in the opposite direction.

This "roll" of quartz is fed by numerous arms or stringers entering from the west, and its pitch, as in the case of the "pinch" mentioned above, follows the well defined wall markings which at the east shaft are falling towards the east.

The ore proved to be extremely rich, and some of the handsomest specimens ever seen in the Province were taken from it, and shown at the recent Exhibition in Halifax.

At a depth of 100 feet in the east shaft a drift has followed the ore body, proving it for about 40 feet.

The intention now is to sink the east shaft and drive easterly on the main lead. This drift will intersect the "roll" on its pitch and both the main lead and it can be taken out in one back-stoping operation.

It is not at all improbable that parallel formations exist below, though no development work has yet been done to prove their existence.

At a distance of 55 feet south of the "Borden" lead on which this mine is situated, a 20 foot shaft has been sunk between the "Nuggety" and "Westlake" veins on a 3 foot belt of quartz dipping to the north.

The old Madill (8 stamp mill) is still used for crushing.

A new boiler and hoist has been installed at the east shaft and a small "Blake" and a "Northey" pump have also been added to the equipment.

The old hoist is in use at the middle and west shaft.

J. A. Johnson et al.—Several hundred feet east of the "West Lake" Company's mine A. Dunbrack has 3 men engaged in sinking a shaft on what is supposed to be the "Nuggety" lead.

The shaft is 100 feet deep and at the bottom the belt contains about 10 inches of quartz.

A whim is used in hoisting. Work was commenced on July 1st.

Royal Mining Co.—Across the road to the north of Johnson's shaft this company are sinking on a slate belt containing from 15 to 18 inches of quartz in small veins and stringers, and thought to be the "Chittick" belt, which has been opened further to the east.

Great Belt Mining Co.—T. Prince, manager, H. Prince, foreman, and 12 men.

The quarry working has now reached a depth of 120 feet and is 80 feet long. At the east end the old workings, which extend to an additional depth of 80 feet, have been tapped. One steam drill is being used in sinking, and the cableway is used for hoisting.

The 30 stamp mill is now completed and about 3,300 tons have been crushed during the year.

WAVERLEY.

The Waverley Gold Mining Co.—E. H. Emerson, Manager, and J. Hopkins, Foreman. About 70 men are employed. The underground workings have been greatly extended since last year, and the levels on the north side of the main shaft have been driven up to a line of pinch which intersects No. 2 level some 440 feet from the main shaft and intersects the shaft between levels No. 4 and 5.

The north leg of the belt is apparently barren of ore beyond this line of the pinch, and in fact the slate belt itself disappears.

On the south side of the main shaft the levels have reached the following distances from it :—

No. 1	560 feet.
No. 2	543 “
No. 3	367 “
No. 4	388 “
No. 5	about 400 “

Levels Nos. 3 and 4 have reached the line of the "Temple" areas and practically all the ore in these main workings is extracted above No. 4 level, while between Nos. 4 and 5 a considerable block was still in place at the end of September.

The main shaft is 465 feet deep, measured on the incline, and is about 360 feet in vertical depth.

The shaft known as "No. 2 South" has reached a point 350 feet on the incline, but the vein, which at the 130 foot level crossed into the foot wall, becomes smaller and is contained in a narrow belt, the walls of which are extremely hard.

The 130 foot level has been driven each way until the old open cut workings have been reached. Its total length is about 300 feet.

Considerable work has also been done in No. 2 North.

This latter shaft, which was sunk on the north leg, intersected No. 1 level in the main workings at a point 300 feet from the main shaft and sinking was continued to No. 2 level.

At 130 feet from the collar an intermediate level was run. This extends north-easterly from the shaft 235 feet and south-westerly 46 feet.

The large fissure vein which cuts through the hill in a north and south direction appears to follow the "Barrel quartz" on a line of intersection roughly coinciding with part of this level.

A new air drill, the "McKeirnan" by name, was being tested in the mine at the time of my visit. It has an advantage over most other drills in having fewer parts and being lighter in construction, though apparently equally as strong for the same capacity. Rand drills are in use elsewhere in the mine.

The mine was shut down during September and October and the mill from August 1st to October 12th, owing to a lack of available water power.

An average of about 20 stamps have been kept running during the remainder of the year.

To lighten the load on the water power the smaller hoist was removed from the main shaft and the larger one operating the deep skip is being run by steam.

The shaft house at No. 2 south was burned in July, but has since been rebuilt.

In February an accident occurred at the mine ; the powder magazine was blown up and a man named Munro killed

Since then a new system is being employed for thawing the dynamite.

A magazine has been built on the site of the old one, measuring 8 feet by 10 feet, and with double walls (4 inches between boards) the space being filled with sawdust. This building is 7 feet high and has a pitched roof above. It contains a bin 6 feet by 7 feet and 4 feet high, filled to within 18 inches of the top with manure. The cartridges are laid on this and covered with bags. This method is said to sufficiently thaw the "powder" in a remarkably short time while the manure has only to be renewed occasionally. An incandescent lamp arranged outside the building gives light at night through a specially designed window, and any chance of danger from defective wiring, etc., is removed.

This bin holds at present 7 cases, and its capacity can easily be increased. In a smaller building some distance away another method is employed for completely thawing that wanted for immediate use.

In a blanket lined bin holding 130 lbs. of dynamite, gauze wire trays are set one above the other and underneath a galvanized metal pan catches the drip. These trays and the pan are removable and are constantly washed. The heat is applied by placing close to the bin on the floor two cans of hot water. The temperature of these is supposed to be kept below 125° F. and a theremometer is supplied for testing.

W. Temple's property.—On the areas adjoining those of the above company W. Temple has a vertical shaft down 150 feet, from which point the vein is driven on for 68 feet northerly and south about 100 feet. The northern portion of the level connects with one of the stopes of the Waverley Gold Mining Company's workings. The vein appears to average here about 8 inches in thickness. The above shaft is situated on the anticlinal of this part of the district.

RENFREW.

The "Thompson" mine has been working during the year, 974 tons yielding, according to the returns, 1,374 ounces.

A small crushing was also made by the Warwick Co. in August.

FOREST HILL.

Strathcona Mining Company, Aug. 26, 1902.—W. Borden is now manager here, and J. C. Mason is foreman. Thirty men are employed.

The "Compressor" shaft has reached a depth of 260 feet. At 206 feet levels have been driven east 180 feet, and west 145 feet. At the face of the east level a bluff is left 15 feet in height, and a drift is in on the belt another 100 feet. From the face of this drift the ore has been stoped up to the shaft at a depth of 130 feet from deck. The old workings on the east side comprise all the ground above this level and to a distance of about 300 feet east of shaft. At the face of the west bottom level a straight bluff rises to a height of 20 feet, and from here the older workings extend another 80 feet.

At the shaft bottom the ore measures 6¼ inches, but above this in the shaft, is a barren space extending for 40 feet below the 206 feet level. This is probably a "pinch" between the regular shoots of ore, which pitch gently to the east. Sinking is now in progress.

Work on the shaft to the east, mentioned in last year's report, has been abandoned, as have also the operations on the "Ophir" lead to the north. A shaft house was built over this latter place. A 6 drill compressor is in use in the compressor shaft, and supplies two Rand drills. The mill which is situated upwards of 1,000 feet to the eastward has been running on night shift.

Modstock Mining Co.—Work commenced in this mine (which had been shut down since January, 1901), about the middle of March last.

B. E Paterson is manager, and 27 men are employed. John Gillis is underground foreman.

This mine is situated immediately to the westward of the above company's works, and the shaft, which is 215 feet deep, is 340 feet west of the shaft of the Strathcona Mine.

From a depth of 126 feet in the shaft, the ore has been worked out for about 70 feet, both east and west of the shaft. Eighteen feet below this level a zone of dead ground 25 feet in height exists. This apparently corresponds to the 40 feet pinch noted in the above description. In fact the characteristics of the vein in this mine are similar to those in its extension through the Strathcona property, and the same regular ore shoots and barren pinches are recognized.

The men are working two 10 hour shifts, and operations are chiefly confined to sinking.

Ten of the 20 stamps in the mill have recently commenced crushing.

COUNTRY HARBOR MINES.

Messrs. Blair et al, Aug. 27, 1902.—These mines were idle at the time of my visit. A. Cameron, who is in charge of the property, was living on the ground. Work was commenced in April on a large belt of slate and quartz, measuring about 6 feet in thickness. After sinking a shaft to a depth of 50 feet work was stopped.

The measures in this part of the district are very irregular and twisted, owing, no doubt, to the intrusion of the granite.

In a tunnel driven in the hillside for several hundred feet across the strata, alternate bands of "whin" and granite are exposed and at some distance from the opening a large body of quartz 5 feet in width is intersected.

Fraser & Sweet.—J. A. Fraser is managing this property, which is situated on the east side of the road, and stands in the name of P. J. Griffin. About 7 men are employed.

Two shafts have been sunk to a depth of 90 feet, and are 50 feet apart. The ore between them is worked to the surface. The vein, which varies from a few inches to over a foot in thickness, is contained in a 4 feet slate belt, whose strike similarly to the course of the strata in the other parts of the district is north and south. The dip is 55° to the west. A small block of ore has been taken out at a depth of 40 feet in the north shaft, and on the north side.

A whim is used in hoisting, and the ore is crushed in a 5 stamp mill near the mine.

ISAAC'S HARBOR.

GOLDBORO.

J. R. Stuyvesant, Cyanide Plant.—These works which were moved last autumn from Caribou have been enlarged to more than double their former capacity, and several new features have been added.

The plant is contained in one enormous building 407 feet long, and varying in width from 30 feet to 70 feet.

This building is connected by a trestle 50 feet high and 100 feet long with the Richardson Gold Mining Co.'s mill, whose batteries are at present supplying "stock" for the process.

These tailings are raised 50 feet by a Centrifugal pump (4½ inch suction and 4½ inch discharge), and carried by a sluice over the trestle to the slime separators.

There are 5 of these settling tanks each 25 feet square, 8 feet high and holding 200 tons of sands.

It was found that the slimes collected in the corners of these tanks and they were boarded across, which somewhat reduced their capacity.

The pulp enters the tanks from the sluice box through a distributor, which is constructed as follows:—

A series of iron pipes are arranged horizontally from a central dish or basin covered with a mesh to catch foreign matter. The pipes are long and short alternately, and bent at the ends to ensure a circular motion. The liquid mixture enters the central dish through a vertical feed pipe from the sluice box, and by the horizontal pipes is fed evenly through the tanks, over which the "distributor" runs on a trolley.

On each side of the tank is a vertical wooden gateway made like a sluice box, and perforated with holes at regular intervals from top to bottom.

As the water carrying the slimes reaches these holes a roll of canvas is pulled up, and covers the rows below, allowing the slimes to flow off with the water as it rises. The slimes are carried off from here by a sluiceway underneath, and the sands are * shovelled out through two hatches in the bottom into 1 ton ore cars which carry the stock to the leaching vats.

The tanks are constructed with a false bottom made up as follows:

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*Two men in the tank, and four trolley men empty 1 tank in from 1½ to 2 ten hour ifts.

Slate placed on tank bottoms at intervals of a few inches.

A layer of osnaburg.

A layer of 8 oz. duck on top.

There are now 10 leaching vats of the same circular pattern and dimensions as formerly used and described, i. e.:

Twenty-five feet diameter, 5 feet in height, and holding about 100 tons. The trolleys containing sands from settling tanks are run on to turntables on top of these vats, and the contents distributed evenly with little manual assistance.

The strong solution of Potassium Cyanide (.25%) is fed from the solution tanks on to the vats, until its surface stands 4 inches above the sands, and it is kept at this height during leaching. The filter bottoms are then opened, and percolation takes place. The liquid flowing off is at first weak, but gradually becomes stronger, and when it is up to strength (.19% to .20%) the bottom is closed, and the weak solution (.10%) is fed on to the sands. On this being drawn off pure water is allowed to percolate through the vats thoroughly washing the "stock." From 36 to 40 hours is employed in complete lixiviation, and one man with a hose and nozzle empties 1 vat in 3 hours, iron doors in the sides being utilized for this purpose. The filter bottoms in the leaching vats are composed of strips of 2x4 scantling placed on edge across the bottom. This is covered with a deal floor perforated with round holes 2 inches in diameter. Above this is laid cocoa matting, and on top 8 oz. duck, wedged down around the edge with rope. The same arrangement of perforated pipes with blast of compressed air can be used as in former plant. All liquid passing through vats is now passed through zinc boxes to save any chance of loss, and an automatic weigher, gauge and sampler is used to check and test results. After passing through the zinc boxes the weak liquid is carried up to the solution tanks and after being brought "up to strength" is used again.

Refining the bullion.—About once a month the "gold mud" from the bottom of the precipitation boxes is collected and subjected to treatment with acid, roasted and smelted, and every 3 or 4 months a general *clean up* will take place.

The capacity of the above plant is about 150 tons per day, although not at present running at its full extent. In fact it has practically been only started.

The plant is, I understand, owned by J. R. Stuyvesant.
H. S. Badger is manager, and has employed J. W. Lindsay as assistant, and 12 men.

The power plant includes an 80 H. P. boiler, supplying the sluicing pump, solution pump and small compressor. Commodious office laboratory and store accommodation is contained in the building.

It is hoped that the process will prove a success, though experiment alone can decide this.

The Richardson Gold Mining Co., Aug. 27th and 28th, 1902.— During the past year 29,000 tons of ore have been extracted and crushed at this mine, and the underground workings have been extended as follows:—

The main east incline has now reached a distance of 760 feet. At 707 feet a level is driven on the belt 90 feet each way, and underhand stoping has been carried up from the faces to a level driven at a depth of about 670 feet. This level is in 220 feet on the south leg, and 323 feet north-westerly.

Above the end of this level on the south side a pillar has been left 30 feet long by 30 feet high, and at the shaft under the level there is a small rock support.

On the north side two pillars 30x30 feet support the walls and between these at close intervals heavy stulls are *hitched.* At the face of this level a block of ground remains in position, measuring about 40 to 50 feet in height, and about 140 feet on the level.

West of this block and on the same level the ore is all out to the north shaft, a distance of 110 feet, and on the west side of the shaft the level is continued for 120 feet.

This north shaft only measures from the deck 285 feet to the level just mentioned; but the difference in this measurement and the distance from deck to the corresponding level in the *main shaft is accounted for by the difference in dip which in the last 150 feet of the main shaft averages only about 19°, whereas the north shaft towards the bottom dips at 74° 30.

The ore is extracted above the bottom level for a distance of 85 feet west of the shaft, and the ground above the 250 feet level is worked out for some 200 feet or more in the same direction—westerly. At the 200 feet level, south of the main slope, in the old workings, a 4 inch discharge pump handles the water which is pumped to this poinct rom the bottom by a No. 7 Cameron sinking pump 4 inch suctiton and 3 inch discharge.

The enlargements in the mill plant have been completed during the year, and it now contains 60 stamps and a new 100 H. P. Mumford boiler (Robb), and the old 100 H. P. boiler. The old 60 H. P. boiler is also in the building, and is kept as a reserve.

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*The figures indicating the dip of this shaft in last year's report, through an error in printing, became transposed, giving an erroneous idea that the shaft was steeper at the bottom than the top.

The Wilfley concentrators have been done away with, the * ailings now being sent to the Cyanide plant.

At the shaft house a new Jencke's hoist and a 100 H. P. boiler have been installed.

During the year the wharf and railway from it to the mine have been finished. This latter is over a mile and a half in length.

A vertical shaft has been sunk to the eastward, and has tapped an overlying vein on the south dip at a depth of between 150 and 200 feet, from which point a cross-cut was driven to the north dip.

At the time of my visit these workings were full of water and the above information regarding them was given me by the manager, Mr. Cox.

At the time of the last inspection this shaft was 160 feet deep and measured 12 feet by 6 feet inside timbers.

The setts are 10x10 inch square timber, and placed 4 feet apart for 60 feet, and then at intervals of 15 feet apart, and are cased with plank driven behind.

John Thornham is underground foreman, and about 95 men are employed by the company.

Dolliver Mountain Mining Co.—G. J. Partington is manager of this property and Dan McAskill is employed as foreman. As anticipated in last year's report, operations have progressed rapidly particularly on the surface. During the year the drainage area has been located and surveyed, and is said to cover 50 square miles. Two dams have been built and a sluice and 44 inch flume constructed to the power house a distance of 4000 ft. from the lower dam. From the power house, which contains a 16 inch McCormick turbine the generator and Ellicot Governor; 250 H. P. is said to be cabable of being generated, and is electrically transmitted to the shaft house and plant on the hill above. At the time of my visit the turbine shaft had sustained an accident which necessitated the stoppage of work on the shaft, and the mine was therefore full of water.

This shaft is sunk on the apex of the anticlinal on the eastern pitch of the dome. A description of the belts cut below was given me by Mr. McAskill; the following being a summary of the work done :—

The shaft, which is vertical, measures 17 ft. 6 inches x 4 ft. 6 inches inside timbers, and is divided into three compartments.

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*Since my visit the large Cyanide plant has been shut down and tests (with successful results, so I am informed,) with the Bromo-Cyanide process have been applied to the concentrates.

At depths of 55 ft., 92 ft., and 102 ft., small veins were cut which thought not apparently of workable size showed the dip of the measures which lie at 19° to the south and from 24° to 45° to the north.

At 130 ft. a belt of ore was intersected which measured 32 ft. in the shaft, and judging by the samples shown me, resembled the Richardson belt, in composition. The total depth of the shaft is 190 ft. The pitch of these veins to the eastward varies from 10° to 16°.

A temporary shaft-house, hoisting frame and sheave are to be shortly replaced by new and larger gear, part of which is on the ground already.

A large engine house 60 ft. x 45 ft near the shaft contains a large double drum Lidgerwood electric hoist and dynamo, installed by the Canada General Electric Co., and one half of a Rand 15 drill air compressor. Two No. one drills are used in the mine. A commodious forge has been built near the engine and shaft houses.

Foundations for 80 stamps are practically completed and 40 stamps are to be installed at once.

This latter building is situated at a considerable height above the shaft; but unfortunately this could not be avoided for several reasons.

The roadway from wharf has been completed during the year and occupies a good location.

GOLDENVILLE.

Royal Oak Mining Co., August 29th, 1902.—Work on this property has been pushed ahead rapidly, the chief and practically all the expenditures having been wisely made underground to ensure enough reserves for large scale treatment.

W. J. McIntosh is still managing the property and Gardner McKenzie is foreman. Sixty men are now employed and the bulk of the work is being done at the western end of the property while the deep shaft on the "Big" Lead has been abandoned and allowed to fill.

The most westerly of the two shafts mentioned in last year's report as being on the "Jumbo" lead, has been sunk to a depth of 215 feet, and the following exploitation has been done in connection therewith. The drift at the 40 feet level has been extended west for a distance of 75 feet, and east of the shaft on the same level, connection has been made with the drift from the old shaft, 100 feet to the eastward. The 100 feet level has also been driven east and connected with the stoping from this shaft, and west for 150 feet. At a distance of 30 feet west of the shaft a cross-cut from the level has been driven north 15 feet to the "Hayden" lead and connects with a shaft on this vein. The bottom level, at a depth of 205 feet from deck, is now 50 feet west, and 38 feet east of shaft and a cross-cut 20 feet west of the shaft has also been driven to the Hayden lead through it.

This tunnel taps the vein below the depths of the present workings. Practically no stoping has been done with the exception of a small block below the 40 feet level. The shaft which is driven on the vein dips north at about 40°, and the belt averages about 18 inches of milling stuff.

On the "Hayden" belt to the south a shaft has been sunk during the year to a depth of 130 feet, and sinking is still in progress to meet a raise just commenced from the end of the cross-cut from the 250 feet level in the "Jumbo" workings, above described.

At 100 feet in the shaft a level is in west for 80 feet, and from a distance of 40 feet in this level blocks of ore have been extracted extending to the shaft above and below the level. On the east side the ore has been taken out by breastwork from the shaft bottom to the surface at a distance of 60 feet from the shaft. A small quantity of the belt, measuring about 50 feet long and 20 feet high has also been removed at the end of a cross-cut from the old workings and at a depth of 100 feet from surface. This place is not connected with the other workings, and is at a distance of 75 feet east of the "Hayden" shaft. This shaft dips north on the vein at an angle of from 40° to 48°.

Pumping is conducted by a small Worthington pump, which lifts from the bottom of "Jumbo" shaft to the 100 feet level and discharges into the old workings from where it is taken to surface by a Cornish pump.

New engine and shaft houses have been built at the shafts on these leads, and a boiler and engine installed for hoisting.

At a distance of about 125 feet north of these works prospecting operations are in progress by the company, and have uncovered several large belts, including the McKenzie and German, measuring 6 feet or more in thickness.

In the mill building foundations have recently been put in for 10 additional stamps, making 20 stamps in all. These are to be installed at once.

Bluenose Gold Mining Co.—A. G. McNaughton, manager, Stephen Monk, foreman, and between 50 and 60 men employed.

Little work was done on the "Springfield" belt since September, 1901, the bulk of operations being confined to opening up new ground to the north, an account of which I give below :—

On the "South" belt small blocks of ore were extracted where the cross-cut from the 113 feet level on the "Springfield" belt tapped the lead.

At the 260 feet level in the Springfield workings and about 30 feet from the shaft a cross-cut was driven north for about 230 feet in length, and has cut several large belts, three of which have been named the "Fraser," "McNaughton" and "Cantly" respectively.

These have all been opened on from this cross-cut, and have been intersected in a lower cross-cut, directly beneath this and driven from the 360 feet level on the Springfield belt.

At the 260 feet level a drift is in west 225 feet, and east 70 feet from the cross-cut.

Considerable work has been done on the McNaughton belt, as follows:—

At a point 30 feet west of cross-cut a raise has been made for a height of 60 feet, and the ore is stoped down to the east face of the level. This level is connected by a raise from the lower level, which is in west 300 feet, and east 185 feet from the lower cross-cut and with the exception of a pillar 30 feet deep by 90 feet long under the 260 feet level the ore is out on the east side of the raise to within 20 feet of the face of the lower level. West of the raise a block has been stoped 170 feet long, and about 70 feet high. All the above mentioned work has been done by the backstoping method, while a strip of ore 20 feet deep on the west side of the raise and 150 feet long has been removed from beneath the upper level by underhand work.

This belt, the ore of which somewhat resembles the Richardson in appearance, measures about 6 feet in width, including slate, quartz and whin.

Rand drills have been replaced by those of the Sullivan pattern, which apparently give great satisfaction.

Stuart-Hardman property.—Mr. Geo. W. Stuart informed me that he contemplated opening a 300 feet shaft on area 743. This is to be 15 feet by 5 feet in size, and the intention is to work the Palmerston and adjoining belts by a system of cross-cutting.

The extensions of these deposits to the west of this area have been little exploited in the past, development work being retarded by the swampy nature of the ground. Nothing, however, has yet been done in the way of commencing actual work.

WINE HARBOR.

Plough Lead Mining Co., August 30th, 1902.—M. McGrath, manager, and 25 men.

Work during the past year has consisted in following on its eastern pitch the large shoot of ore forming the "Plough" belt. A point has now been reached some 20 or 30 feet east of the east shaft, which has recently been connected with the workings by sinking and raising.

A series of three small breaks occurring just west of the east shaft with a strike north-westerly and dipping to the east, throw the strata about 11 feet southerly on the east side of the planes of fault. It is supposed that these faults cause besides the lateral, a vertical displacement.

The belt has also been followed on its western extension to the "rise" of the ore as far as the large main fault on the western side of which it is thrown south for 100 feet or more.

This portion of the workings lies on the north side of the main west shaft, which is sunk on a small lead, the strike of which is apparently crossed by the main body of ore.

The ore is won by driving on the south side of the belt, and taking off consecutive slices by a system of overhand stopes.

The east shaft is to be sunk through the ore body, and after removing a triangular block, which will be left on the west side, levels will be driven east through the belt, and operations continued as before.

The "Westcasset" belt, which measures west of the main fault some 14 or 15 feet in width, as well as several other large deposits, intersect the property, and with some little development work will be available as a future supply.

The 15 stamp mill and steam plant are apparently in good order and in constant use.

Old Provincial Mining Co.—S. R. Heakes, general manager, E. Conroy is in charge of the shaft being sunk for the "Plough" lead, and Geo. Hirschfield is at the Caledonia mine.

At the former place the shaft is 300 feet deep and a level has been driven each way—east 20 feet, and west 50 feet. At the end of the west drift a cross-cut has been made north for 25 feet. This is to be abandoned and driving to the southward will be commenced to catch the belt.

At the face of the east drift several small leads and stringers of quartz appear, which resemble in part, those entering the "Plough" belt on the west. A number of these stringers have also been cut in the shaft. A Cornish pump is used to lift the water, which is heavy.

At the Caledonia mine, at 131 feet, in the most easterly of the two shafts opened last year, an incline has been sunk easterly on the belt for 120 feet at an angle of 47°. Part way down this incline a drift is in east 47 feet and at the bottom another is driven east 53 feet.

A fault was encountered in these and passed through. The belt is 8 feet in width, and contains from 1 to 2 feet of quartz as at present exposed.

The mill, which has been enlarged from 5 to 10 stamps is situated here, and since the last visit a 5 drill Ingersoll compressor has been installed. One Ingersoll drill is used at the Caledonia pit, and 2 have been in operation at the "Plough" lead shaft so called; but at present only one is used in this latter place.

A Cameron pump at the bottom of the Caledonia mine raises to top of incline from where a Duplex Northey lifts to surface.

Napier property.—L. W. Getchell has these areas bonded, and R. S. Irving as superintendent, is opening up the old works. Fifteen men are employed. An old shaft on the Moore belt, supposed to be 200 feet deep has been cleaned out to a depth of 175 feet. At the 50 feet level a cross-cut has been driven south for 112 feet across the measures, and exposes a belt of leads some 70 feet wide. The whole width is said to contain roughly from 30% to 40% of crushing material.

At 175 feet in the shaft another cross-cut has been commenced and is in south 12 feet.

From the upper cross-cut, connection has been made with old workings to the west and two shafts on some of the contained belts. The idea is to work the larger portion of this ground by leaving ribs and pillars.

The old Napier mill (13 stamps) and the old plant, including an 80 H. P. boiler and an engine used for hoist, mill and Cornish pump are in use.

ECUM SECUM.

Treasure Island Mining Co., September 1, 1902.—This property, which has been opened during the year, is situated on the east side of the Harbor and near the water.

H. T. Harding is general manager, and J. B. McKenzie foreman. Eighteen men are employed.

The shaft which has been sunk on a 12 inch lead dipping to the north at 84°, is 50 feet deep, and is supposed to be near the anticlinal of the district. The shaft measures 18 feet by 4 feet inside timbers, and has two tub-ways. Hoisting is effected by a whim.

One steam drill is used in sinking, and a 5 stamp steam mill is in operation. Ground was broken here in May, 1902.

G. C. Armstrong has also opened the same lead about 120 feet west of above works. His shaft is 60 feet deep and about 50 feet of ground has been drifted on.

The Donovan Mining Co.—On the west side of the harbor operations on the surface are progressing rapidly, so that with a large plant development work may be prosecuted on a large scale.

So far as those portions of the workings that were open, would permit, the following facts were ascertained.

A slope on the south dip of what is apparently a subordinate anticlinal fold, has been driven for 170 feet. A cross cut has been driven from here north and south, and several beds have been cut.

At the foot of this slope, and at a distance south of it, in the cross-cut drifts are open, the first in an easterly direction 180 feet, and the second on what is termed the Galena lead (a 6 inch vein) for 170 feet east and 200 feet west.

A vertical shaft has been sunk 120 feet, and taps the cross cut at a point 28 feet from the bottom of incline. It is divided into three compartments each 4 feet by 4 feet.

Mr. Gillespie, the manager, informed me that the intention is to sink this vertical shaft to a depth of 200 feet, and proceed with development work until one year's supply of ore is blocked out, operations to be confined to three veins. As stated all the work at present is being done on the surface, and consists in the construction of an engine room, 38 feet by 48 feet. Carpenter's shop and blacksmith's forge, 20 feet by 30 feet. Gallows frame, 40 feet high. This latter is over the vertical shaft. The plant which is expected to be in operation by October, includes a Matheson 100 H. P. double drum hoist, cages and trams. An old 8 stamp mill is on the property and is equipped at present with a 4 stamp battery only—used in testing.

C. H. Drillio is foreman, and 20 men are engaged at the mine.

HARRIGAN COVE.

Kent Archibald's Property.—Munroe Archibald, Manager, J. A. Fraser, Foreman, 28 men employed.

The shaft mentioned in last year's report has reached a depth of 125 feet. At 100 feet drifts are in about 100 feet each way and blocks of ore stoped out above the levels to within 35 feet of the surface.

The work has been practically abandoned for the present as a rich strike was made recently to the south. Two shafts 80 feet apart have been sunk here and a small lead on the footwall appeared extremely rich. The western of these two shafts is about 35 feet, deep and small blocks 15 feet and 20 feet have been removed on each side.

Not enough work has been done however to tell much about the continuity or size of the ore.

The 5 stamp mill built last year is still in operation.

The St. Anthony Mine though idle for several months is being kept unwatered.

SALMON RIVER.

The Dufferin Mine Syndicate, September 1, 1902.—This company commenced work here about a month ago with the object, so I am informed by Mr. Maze, the superintendent. of testing the ore left unworked in the mine, partly with a view to its future treatment with the Bromo-Cyanide process.

The company employ Frank Munro as foreman, and have about 40 men on the pay roll. Thirty of the 60 stamps and 12 Frue vanners are kept running, and sufficient of the plant, including the compressor, which supplies five drills, is also being used.

The main vertical shaft is 400 feet deep, and cross-cuts are made both north and south at the 200 feet, and 300 feet levels, and south at the 400 feet level, though practically no work has been done on the former side of the shaft, which, at the time of inspection, was full of water up to the 300 feet level. Operations now consist in extending the 200 feet level east beyond and under the old workings when a raise will be made to the virgin ground above, and the ore, if satisfactory, extracted. This working place is about 420 feet east of the shaft.

It was here that a man, while timbering, was recently hurt by a piece of rock falling on him. At the time of my visit he was reported as doing well.

At the extreme western face of the 300 feet or bottom level the ore on the south dip is being worked up over the anticlinal fold which turns over to the north dip at a short distance above the level. A main or subordinate synclinal fold, probably the latter, may be observed in the wall of the cross-cut from the shaft to the 300 feet level on the south dip. Several other veins have been driven on and stoped in both levels, but are not being worked at present. This question of the successful and economical treatment of the concentrates by this new process, without previous roasting, is an important one to the Province, and especially so to those mine owners with ore bodies containing large percentages of refractory gold in the concentrates and slimes, and such tests are in line with the development of recent experiments being carried on in the direction of a high per cent. extraction. It is obvious that in such cases a much smaller plant will suffice than if all the pulp were treated by the ordinary process and without the disadvantage of previous roastings.

TANGIER.

The Tangier Amalgamated Mining Co., Ltd., September 1, 1902.—This mine, which was reported on last year, shut down shortly after the last inspection (in Sept., 1901,) and re-opened under the new company in June, 1902.

Arch. McPhail is still managing the property with a force of 30 men.

Little work has been done underground, though preparations are being made for more extended operations.

At the north face of the cross-cut from the Little South lead, on the 160 feet level, the "Pascoe" lead so-called, has been opened by a drift 40 feet long. This vein is apparently close to the anticlinal.

On the "Nuggety" lead two small blocks of ore are being stoped at the east and west headings of the 160 feet level. Two No. 2 Rand drills are in use here.

Some 600 feet west of the "Nuggety" shaft, and on the same vein, the Kent shaft, 170 feet, has been opened, re-timbered, etc., and drifting has commenced at the bottom level.

A new shaft house has been built here, and some plant (45 H. P. boiler, and a 30 H. P. hoisting engine) that was formerly in use on the Leary lead, has been installed.

The pit is unwatered by a steam pump. Since last year a 4 drill Rand air compressor has been installed in the engine house at the "Nuggety" works.

Ten stamps in the mill are now running and the other 10 stamp battery is to be refitted at once.

MOOSELAND.

Preparations were being made here to pump out the Argonaut Company's shaft, and to resume operations on the "Cummings" belt.

MOOSE RIVER.

The Touquoy Mining Co., September 3rd. 1902.—Robert Kaulbach, general manager; Angus McDonald, foreman, and 10 men employed.

A new shaft 90 feet deep has been sunk during the year, on the "Doull" lead, and from 50 feet to the bottom a block of ore 15 feet wide has been worked out on the east side.

At this 50 foot level a drift is in 20 feet west, and a cross-cut has been driven north 27 feet to the Colonial shaft.

The Touquoy shaft 30 feet west of the Colonial shaft, has been continued on the large slate fissure for over 200 feet.

At 180 feet, an upraise has been made to meet a shaft driven from the surface on the "Doull" lead.

A block of ore has been stoped here for about 50 feet in length and 30 feet high.

Some very bad ground was encountered in the upraise, probably caused by the fissure crossing the strata.

At a depth of about 70 feet, a new shaft on the "Taylor" lead has been connected with the Touquoy shaft by a cross-cut 125 feet long. Mine and mill were running night and day shift at the time of my visit but there was talk of shutting down temporarily in the near future.

Gladwin Bros.—These areas are bonded from the Colonial Company, and J. Reynolds, as manager, has sunk a pit 25 feet on a 5 foot belt with several small leads exposed.

A small vertical boiler and hoist and Cornish pump comprise the plant. Work was commenced in August.

W. Reynolds with 2 men is tributing on the "Moleskin" lead. Shaft 40 feet deep and sinking in progress.

A. McGregor has a few men working on the Montreal property.

CARIBOU.

Baltimore and Nova Scotia Mining Co., September 3rd, 1902.—L. W. Cetchell, manager, Fred Darragh, foreman, and 42 men on double shift.

Extensive improvements and enlargements on the surface and corresponding development underground are noticed since the last visit to this mine.

The main vertical shaft is now 700 feet deep. It intersects the lenticular fissure vein on which the mine is situated at the 500 feet level. This vein crops about 140 feet north of the shaft collar and at the 700 feet level it is connected by a cross-cut 41 feet in length.

The 400 foot level is in west 160 feet, and east about 400 feet.

The 500 foot level is in west 600 feet and east about 640 feet. At 25 feet from this east face a cross-cut is driven south 150 feet, and at a point 100 feet from its head a drift is in east 100 feet, and west 25 feet. At the east face of this drift another cross-cut has been driven north 125 feet. No ore was observed in any of these cross-cuts or drifts from the 500 feet level or in fact in the level itself beyond a point about 450 east of shaft. No level has been driven at 600 feet, but the bottom or 700 foot level is in west 230 feet, and east 160 feet.

Blocks of stoping have been done as follows :—

A small block about 45 feet by 25 feet west of shaft above 400 foot level.

All the ground between shaft and west 400 feet level and to a point in 500 feet level 200 feet west of shaft.

Above east 500 feet level from a point 65 feet east of shaft to a point 430 feet east of shaft. This block extends up to the 400 feet level at a distance of 260 feet east of shaft in that level.

A winze has been sunk from the 500 feet level 265 feet west of shaft and blocks of ore removed on east side for 150 feet in length by 50 feet in height, and on west side of winze, at the bottom, 40 feet by 40 feet.

Above 700 feet level, both east and west, blocks about 150 feet long by 20 or 30 feet high have been stoped out.

It would appear that the vein is in the form of a chimney or one shoot dipping southerly at 45° and pitching west at about 30° and variable in height and thickness.

The mill is admirably arranged. In 2 of the 3 compartments in the shafts, Matheson cages are used carrying 1,300 lb. ore cars, one dropping as the other raises (the counterbalance system of drums being in use.) These cages dump on to the top floor of the mill where the rock is separated by two men and sent through the grizzlys and rock-breaker to the 300 ton ore bins, the black rock going through a separate chute and hopper into the dump car. Broken ore is passed through "Challenge" automatic feeds into the batteries which are of the underfeed pattern, with 900 lbs. stamps dropping 80 times per minute. The shoes and dies are of chrome steel, though "Kuppel" parts are also used. The screens are No. 28 mesh. Three boilers, two of 100 H. P. and one of 80 H. P. are used, with wood as fuel. A new 125 H. P. Goldie and McCullough engine and the double drum hoist are installed in the engine room; also a new 10 drill Ingersoll compressor for drills, pumps, etc. Five drills are used on each shift at present, and these will be increased to six per shift in October, when the mill will also be running double shift. The 40 stamps are only running 10 hours in 24 at present.

LAKE CATCHA.

John H. Anderson and Frederick Hanright, working here during the year, have produced about 600 ounces.

NORTH BROOKFIELD.

Brookfield Mining Co., October 1st, 1902.—W. L. Libbey, manager; S. Crowe, foreman.

About 80 men employed in night and day shifts. This property has been bonded, so the manager informed me, to an American Co.

All the work during the past year has been confined to the ground below level No. 6. The other levels have been extended until the following distances west of the incline have been reached:

No. 8, 550 feet where it intersects the "Mill" lead.

No. 9, 600 feet.

No. 10, about 400 feet.

The incline has also been sunk to a depth (measured on the slope) of 160 feet below level No. 10, and at 120 feet below this level No. 11 has been driven west for 170 feet. No. 10 level has also been driven east of the incline for 140 feet. During the year considerable ore has been stoped between the levels.

The "Mill" lead, a "main" vein, conforming to the strata and whose line of intersection with the fissure roughly marks the eastern limits of the workings has been followed in No. 8 level to a point about 40 feet west of its junction and shows about 18 inches of quartz in two veins lying closely together.

In the main shaft at 100 feet from the surface this belt was followed for some 30 or 40 feet, and at this point measured about 8 feet 6 inches of quartz.

Another "main" lead similar in appearance to above and aggregating about 7 inches of quartz has been driven on from levels, Nos. 8, 9, 10 and 11; and tests have been taken out.

This vein intersects the "fissure" on a line parallel to the "Mill" lead, though at a point several hundred feet nearer the shaft.

The question whether these interstratified deposits carry workable values is an important one to the district, as hitherto they have been practically unproved at these depths. Just above No. 4 level a No. 6 Cameron "Lifter" pump takes the discharge from a Northey (3 inch suction and 2½ inch discharge) at No. 9 level, to which point the sump is unwatered by a Cameron prospecting pump (2½ inch discharge.) These pumps are now run by compressed air.

On the surface several changes and improvements have been made in the plant.

The engine house has been enlarged and a new 100 H. P. (Truro foundry) boiler and a Rand 8 drill compressor have been installed therein, the latter machine taking the place of the old compressor.

The electric lighting plant has also been placed in this building.

Three machine drills of the Rand (Slugger) pattern are used on each shift.

In the mill building the foundations for the mortars have recently been changed.

The old ones which had been built of green hemlock had become rotten, and have now been renewed by seasoned spruce.

There is some talk of adding 20 more stamps to the mill. If this is done, the foundations will be constructed of masonry.

A Wilfley table and an Ostermoor concentrator have replaced those of the Improved Triumph pattern formerly used.

FIFTEEN MILE BROOK.

Lowe Bros. et al, October 1st, 1902.—G. A. Irwin has replaced J. McGrath as manager, and 16 men are now working below and on the surface.

During the year the shaft has been sunk an additional 30 feet making it 100 feet in all. At 70 feet a level was driven easterly for 90 feet on the fissure vein.

At about 70 feet from the shaft a fault occurs and cuts the lead off although beyond this fault a small vein appears in the belt. This fault pitches at a low angle westerly and intersects the shaft near the bottom. The bottom or 100 feet level is in easterly 60 feet and the ground between the levels has been stoped out by the underhand method.

On the surface a 5 stamp mill has been erected, the parts having been brought from Whiteburn. A new cook house and stable have also been built.

A few days previous to my visit an accident occurred at this mine by which James Boland broke his left leg below the knee, and Wm. Martin sustained a severe shaking up.

The bottom section of the ladderway was injured by the shots and gave way when both men got on it.

Bad rock occurs on the hanging wall of the shaft and plenty of timber should be used and the dangerous places carefully watched.

LEIPSIGATE.

Mic-Mac Mining Co., October 2nd, 1902.—T. W. Moore, manager, and J. Fitch, foreman. Twenty men are employed.

The main shaft has now been deepened to 300 feet and the levels at that depth have been broken out. It is the intention to sink and drive so as to open up reserves of new ground.

The 100 feet level has been driven 315 feet south-westerly on the fissure, and about 210 feet north-westerly, also on the vein; and the 200 feet level has been driven for several hundred feet each side of the shaft. The ore has been practically all stoped between the levels though considerable ground is in sight between the extension of the shaft below the 200 feet level and the level on both sides of the shaft.

A new vein has been opened close to the south-west shaft, though sufficient depth has not been gained to tell its extent yet. The same plant is on the ground as formerly and the new foundation is nearly completed under the batteries.

Nova Scotia Development Co.—Work on this property was stopped at the end of January, 1901, and the mine allowed to fill. It was pumped out again, however, in May, and a little work done at the east end. It was finally shut down in July and has remained full of water till the present time.

The "German" shaft has not been deepened, but the bottom level has been extended to a distance west of shaft 180 feet and east 310 feet. At 210 feet east of main shaft—the old shaft mentioned in last year's report, was intersected, the old workings having been broken into some 30 or 40 feet west of this point.

No additional stoping was done during the year, but frequent tests were made systematically throughout the mine, and the results were, so I was informed, highly satisfactory. Mr. Crowe is still in charge of the property.

Home Gold and Copper Co.—This company is also under the management of C. N. Crowe, and 17 men are employed.

Work was commenced on February 1st, on the old Gilmore shaft, situated on the same fissure vein as the two last mentioned mines, and 750 feet west of the "German" shaft, so called, of the N. S. Dev. Co.

When pumped out the shaft was found to be 65 feet deep and a block of ore 65 feet long had been extracted on the east side, and 10 feet of stoping near the shaft bottom was also done on the west side. The shaft has now been deepened to 150 feet, and at 100 feet a level has been driven west 30 feet, and east 230 feet. The pay streaks, as in the "German" works, dip at about 16° to the east, and in fact the general characteristics of this whole fissure vein as exposed at intervals, for over a mile in length, and for depths up to 300 feet are remarkably similar and regular.

A shaft house, cook house and stable have been built and a small boiler and hoist have been installed at the shaft.

The "Owen" 5 stamp mill is being used for testing the development work.

All of which I respectfully submit.

D'ARCY WEATHERBE, C. E.,
Mines Department.

Halifax, November 17th, 1902.

MISCELLANEOUS MINERALS.

IRON.

Dominion Iron and Steel Company.

The operations of this company are now fairly under way, and a brief note of their plant may be of interest.

The site of the works covers an area of 393 acres fronting on Sydney Harbor. There are two piers, one, a low level general freight pier, is 1,047 feet long with four Hunt loading and discharging towers with a capacity of 1,200 tons of steel or pig a day. The other pier is 1,290 feet long and 50 feet above high water mark, and is used for unloading ore and limestone. Five Hoover Mason hoisting machines take the material from the vessels and dump into hopper cars on the pier. A trestle carries to cars to the top of the consumption bins. From the bins the ore passes to a motor driven scale car which transfers it to the furnace skips.

When the consumption bins are full the ore or limestone is stored in 56 pockets outside the bins when they are taken by buckets and distributed as required.

The ore used is a red hematite from Bell Island near St. John's' Newfoundland. The ore contains over 50 per cent. of iron, is low in sulphur but rather high in silica, alumina and phosphorus. When a low phosphorus pig is required small quantities of Cuban or other low phosphorus ore is mixed with it. No mixture of ore is necessary when the pig is converted into steel as the phosphorus ore can be eliminated in the open hearth converters. The limestone is brought from the West Bay, Marble Mountain, and from St. George's River, the former distant 85 miles by water, and the latter 20 miles by rail.

The coal comes from the mines of the Dominion Coal Company, distant from 6 to 22 miles. The coal is crushed, sized, and washed by the jig system. Experiments are being made to see if any advantage accrues from compressing the coal in a mould and introducing it into the oven in a single block. The ovens are of the Otto Hoffman by-product type, being heated by about 50 per cent. of the gas produced. The coke oven plant is equal to an output of 1,400 tons a day of thirty-six hour coke. From the gas, tar is first separated, then sulphate of ammonia is manufactured from the residue.

There are four blast furnaces with a combined capacity of 1,000 tons a day. The gas from the furnaces is used to heat the blast and for steam. The blast furnace stacks are 20 feet in diameter and 85 feet high. There are four Kennedy two pass stoves for each furnace, the stoves being 21 feet in diameter and 85 feet high. There are all necessary boiler houses, with boilers, engine house with blowing engines, pump house and pumps. Water is obtained from the harbor, and from the Sydney River. The metal from the furnaces is partly cast in sand and partly run into ladles. That run into the latter is cast in machine moulds.

There are ten Campbell tilting basic open hearth steel furnaces, each fifty tons capacity. The output is estimated at 800 tons a day. The steel is poured into moulds, from which the ingots are freed by machiners, and pass to the blooming mill, and into the soaking pits. The ingots as required are removed by a 10 ton electrical crane and presented to the approach table at the rolls. Billets from eight inches square down to 3⅞ inches square, and slabs from 16 by 5 inches down to 6 by 2 inches can be produced.

If the intention of having a rail mill is carried out, the blooms for rails will pass directly from the blooming mill to the rail mill. Electric power is extensively used for lighting and operating machinery in all parts of the work. The railway system at the works embraces 18 miles of track, with full equipment of locomotives, hoppers, ingot, billet and other cars.

In this connection the following memo. from the Engineering and Mining Journal of New York may be of interest:

DESULPHURIZING PROCESS FOR COAL BEFORE COKING.

By Oscar Daube.

A difficulty in the production of good metallurgical coke is frequently the high percentage of sulphur in coal that would otherwise make an ideal coke. Many efforts have been made to eliminate this objectionable element, and have been unsuccessful, particularly where the sulphur occurs in organic combination.

Results of tests recently made for the Dominion Iron and Steel Company in connection with the Otto-Hoffman by-product coke ovens at Sydney, having for its object the reduction of sulphur in the coal, are of interest. It is well known that all Cape Breton coals carry an excess of sulphur, running on an average about 2½ per cent. It is otherwise a fair coking coal, although from being somewhat high in volatile matter, the coke is porous and does not bear well in large modern furnaces.

An average analysis of unwashed coal shows:—

Carbon, 75.10 per cent.; ash, 5.84; sulphur, 2.75. The sulphur by washing is reduced to about 1.35 to 1.50 per cent., and the resulting coke generally runs from 0.10 to 0.15 per cent. higher than the coal, showing that no material reduction of sulphur in the coking occurs after washing the coal. These observations and figures were obtained from the Dominion Iron and Steel Company, but it may be stated that coal from the same seam, washed and supplied to the New England Gas and Coke Company, Everett, Mass., and coked in the same type of oven, runs on an average 2.5 per cent. sulphur in the coal and 2.25 per cent in the coke.

The average yield of coke in eight consecutive days was 67 per cent. coke, 7 per cent. breeze, the coke showing an average of 78.96 per cent. carbon, and 1.44 per cent. sulphur, as follows :—

Carbon.	Sulphur.
75.80	1.33
76.87	1.59
80.82	1.67
83.16	1.39
79.39	1.46
75.20	1.23
78.24	1.53
Average 78.96 per cent.	Average 1.44

These figures are given in order that they may be compared with results obtained after the desulphurization process was applied. In the first test a charge of 12,300 pounds of coal was used. Half of the coal was washed and half unwashed. The charge as mixed contained 1.66 per cent. S. The time occupied in the process was 1 hour and 10 minutes. After desulphurizing the charge was coked, yielding 67 per cent. coke and 2½ per cent. breeze. Analysis of the coke showed carbon 89.25 per cent.; volatile matter, 3.7 per cent.; sulphur, 1.27 per cent., indicating a reduction of 0.39 per cent. in the sulphur contents. A second test was made with 12,600 pounds of wet coal, containing 9.4 per cent. moisture and 1.74 per cent. S. The resultant coke (72.5 per cent. yield) contained carbon 87.6 per cent.; volatile matter 4.4 per cent.; sulphur, 1.28 per cent., showing a reduction of 0.46 per cent. in the sulphur contents.

The tests were made without any change in the ovens, and after desulphurizing the charge was coked as under ordinary conditions.

The desulphurizing process does away with the expensive washing plant and avoids loss in coal, and the charging of wet coal into the hot ovens. It also prevents the dilution of the gas liquor by the moisture in the coal coming over as condensed steam from the oven into the condenser.

Some work has been done at a number of points in Cape Breton on recently noticed iron ore indications, but the department is not advised that workable deposits have been reported from them. Some attention is being directed to the Mira district where a considerable tract of country carries iron ore beds of good quality.

In Nova Scotia proper, further work was done at Arisaig and Nictaux confirming the extent of the deposits. Montreal capitalists have taken over the Londonderry mines and works, and are engaged in putting them in order. It is expected that in the spring of 1903 the two furnaces will be again in operation.

In the spring, reports were received of the discovery of rich iron ore in the River Phillip district, Cumberland County. The ore on analysis gave—

	SAMPLE A.	SAMPLE B.
Metallic Iron	68.740	67.50
Manganese	....	....
Phosphorus	Trace	None
Sulphur	.005	.008
Silica	1.100	1.630

The returns of the Nova Scotia Steel and Coal Company show 15,214 tons of brown ore mined at Brookfield and used at Ferrona. The rest of their furnace supply came from their mine at Bell Island, Newfoundland. Their works in Pictou County have been maintained in their usual good order. At North Sydney steady progress has been made with their new iron and steel plant, branch lines, piers, ovens, etc.

The following analysis of Nova Scotia iron by the Canadian Geological Society, may be of interest:—

1.—Hematite. From the Arisaig district, Antigonish County, Province of Nova Scotia, in which locality there occurs an extensive deposit of a dark-reddish-brown to blackish-brown oölitic hematite, upon which numerous trial pits have been sunk on the East Branch of Doctors Brook and on its tributaries Iron and McInnes Brooks.

(*a.*) A fair average sample of the material from four trial pits on or near Campbell's Brook, a tributary of the East Branch of Doctors Brook, was found by Mr. Wait to contain:—

Metallic iron	44.75	per cent.
Phosphorus	0.84	"
Sulphur	0.008	"
Insoluble matter	25.76	"

(*b.*) A fair average sample of the material from eight trial pits on or in close proximity to Iron Brook, was found by Mr. Wait to contain:—

Metallic iron	45.30	per cent.
Phosphorus	0.60	“
Sulphur	0.003	“
Insoluble matter	26.33	“

(c.) A fair average sample of the material from five trial pits on or near McInnes Brook, was found by Mr. Wait to contain:—

Metallic iron	48.77	per cent.
Phosphorus	0.42	“
Sulphur	none	“
Insoluble matter	22.56	“

Limonite. From Grand River Barrens about one mile south west of Grand River Falls, Richmond County.

Metallic Iron	59.89	per cent.
Phosphorus	0.375	“
Sulphur	none	“
Insoluble matter	0.98	“

Magnetite. From old French Road, two miles easterly of the Mira Roman Catholic chapel, Cape Breton County.

Fine grained massive dark-grey Magnetite.

Metallic iron	61.45	per cent.

Manganese There is little to report beyond the operations of the New Ross Mining Company. I append a memo on the mine from Mr. D. Weatherbe, who visited the locality last summer:—

NEW ROSS, August 19, 1902.

The mining of valuable mineral in the eruptive granite formation is a unique operation in this Province, yet such a proposition is being broached by the company.

This property, on which the mineral (Maganese) is not reserved to the Crown, and which therefore pays no royalty, is situated, by road, about 9 miles from the village of New Ross, in Hants Co.

The last 5 miles of this road is well nigh impassable for a wheelep vehicle.

The claim joins on its east boundary the lands of the Church of England, commonly known as the "Dean and Chapter grant."

The surface here is rough and covered with drift granite boulders and the soil produces only a scrubby vegetation.

The company is called the New Ross Mining Co., and obtained possession of the property in August, 1901. Some little work was done during the subsequent 3 months, after which operations ceased until the present summer, when, with Dr. Cain as manager, and 10 men employed, work was resumed. With considerable difficulty a boiler and hoist were installed, and sinking commenced. Apparently no adequate water supply exists close at hand, and when necessary, for boiler, jigs, etc., it is obtained from the workings by pumping.

The country rock is composed of granites intrusive in the Cambrian gold series, and the workings are situated in a fissure with a strike N. 75° E. (so far as it has been exposed), and a dip practically vertical.

The extent of this fissure along its strike has been very little proved, as the prospecting pits which have been dug from time to time have only in a few cases reached bed rock.

The operators were apparently satisfied with the discovery in the surface material of drift pieces of fine looking ore—probable Pyrolusite—and containing in places a small proportion of a reddish oxide of iron.

The shaft is about 50 feet deep, and the vein has been extracted for 40 feet east, and 30 feet west; a small pillar being left on the east side of the shaft. The ore varies greatly in thickness, measuring from 2 inches to 28 inches, and so far as has been shown by present development it is problematical whether it lies in a continuous vein of large extent, or simply fills a gash or crack in the rock.

The north wall seems to be generally composed of a firm and compact rock, while on the south side of the vein it is much decomposed, friable and has a burnt appearance.

The ore is first picked by hand, and the finer portions are separated by two Missouri jigs of the "Joplin" pattern.

It is claimed that a 60 per cent. product is made practically free from iron, lime and silica.

This is worth from $25.00 to $30.00 a ton in the New York market, and has to be hauled some 30 miles or more to tide water.

D. WEATHERBE.

COPPER.

The Cape d'Or Copper Co. continued their development work last summer and express their confidence in the presence of large bodies of rock, carrying valuable percentages of copper. Their works were inspected by Mr. A. V. Cameron, whose memo is given below.

CAPE DOR COPPER MINES, CUMBERLAND CO.

No. 1 shaft 6x12 feet has been sunk 100 feet since last September, It is now 300 feet deep and 750 feet of a tunnel has been driven from it since last September.

The machinery installed at this shaft is as follows:—Two Rand air drills, one 40 horse power Rand drill air compressor, one small Robb Engineering Co. engine, 1 Buffalo blower.

NO. 2 OR HANWAY LODE.

This is an incline shaft about 400 feet deep, with a 300 feet tunnel driven from the same, which shows very rich copper ore. The machinery installed here comprises two large Jencke's Machine Co.'s hoisting engine, one Rand air comprsssor, two 75 horse power boilers, two Rand air drills and one Cameron pump.

NO. 3 BENNET BROOK OPENING.

This is a vertical shaft 6x8 feet, 75 feet deep, with a tunnel driven 160 feet from same. The machinery at this shaft comprises one 50 horse power boiler, one Rand drill, one Cameron pump and the concentrating plant consists of one Blake stone crusher, one 100 horse power boiler, one 100 horse power Corliss engine, one 40 horse power boiler, one 35 horse power Leonard & Co. high speed engine, two setts heavy rolls, jigs, screens, tables and all machinery necessary for concentrating.

BUILDINGS.

At and in the vicinity of No. 1 shaft there are carpenter shops, assay office and drafting room, brick dynamite house, six small houses for miners, and three more in course of construction.

At No. 2 Hanway Lode there is boarding houses for men, accommodating about 40, 6 houses for miners with families, a concentrating building, 140x40 feet, and an engine house building 40x40 feet.

This company is building a railroad to convey the ore from the mines. They have completed two-thirds, have a locomotive and all necessary rails for completion. There have been only one or two slight accidents at these works during the year and these were on the surface. Two men had legs broken by cart upsetting. The most serious accident occurred was due to some liquid lime getting into a man's eye. He was under treatment there and afterwards went to Halifax and had the eye removed. This occurred about two months ago.

Everything about these works looks neat and tidy, and the manager, Mr. Hanway, and his officials, are using all precaution necessary for the safety of those employed.

Operations were begun by the Munro-Thompson Ore Reduction Co., near Westville, in Cumberland Co. I give Mr Cameron's memo on their operations.

The following is a brief report of what has been accomplished at Wentworth :—

The company has concentrated at the mine a coffer dam, about 200 feet long and eight feet high, on which they have constructed a building 25x50 feet. In this building they have a 12 horse power engine, a 20 horse power boiler, also a friction hoist and a pump with a 3 inch suction and a 2 inch discharge.

They have also some tracks and a few cars here, and have done about 500 feet of underground tunnelling, and have mined about 2,000 tons of ore.

The vein or body of ore is about 100 feet wide, with an average thickness of about 4 feet. It runs east and west with a slight dip north.

About one-third of a mile south of this opening they have uncovered another seam of about the same thickness and about 120 feet wide, The company has at this place a building suitable for a blacksmith shop and a tool house.

They have constructed a building 25x50 feet, in four elevations, for the purpose of leeching. In it there are 8 tanks, all piped for water, steam and air. Next to this building there is another in which there are crushed ore bins, and underneath which they have their main driving shafting.

Next to this building there is one called the machinery building, which is about 30x60 feet. In this there is a new 100 H. P. boiler, and 85 H. P. engine, a Blake crusher, with a capacity of 100 tons per day, and the foundation for a 100 ton pulverizer, which is now on the ground. Back of this building there is a large shed for their roasters, one of which is already built. South of this there is another building which is to be used for a smelter, the shell of which is already built, and which they expect to have in operation with the whole of the plant early in 1903.

GYPSUM.

The operations of the Windsor Gypsum Company were extended during the year and an increased shipment effected. Judging from enquiries made, there may be an increased interest taken in the export of this mineral.

The following analysis from the Canadian Geological Survey report will be found interesting :—

1.—Clay. From a deposit about six miles from Louisburg and not far from the sea shore, Cape Breton County, Province of Nova Scotia. Examined for Mr. W. Todd.

A light bluish gray, non-calcareous, plastic, somewhat difficult fusible clay, which when burnt assumes a light reddish-brown colour. It might advantageously be employed for the manufacture of ordinary building brick, drain tiles, and all kinds or common earthenware.

7.—Graphite, Disseminated. From Glendale, River Inhabitants, Inverness County, Province of Nova Scotia. Examined for Mr. James MacIntosh.

The sample examined, contained 31.8 per cent. of graphite. A specimen from the same locality, collected by Mr. Hugh Fletcher in 1879, was found by the writer to contain not more than 13.96 per cent. of graphite, as recorded in Rep. Geol. Surv. Can., 1878–79, p. 2 H.

16.—Shale. From Hay Cove, Red Islands, Richmond County, Province of Nova Scotia. Examined for Mr. M. L. MacNeil.

The material sent for examination consisted of a pale yellowish-greenish, non-calcareous shale, which when reduced to fine powder and moistened with water afforded a slightly plastic mass. This when burnt assumed a light reddish-brown colour. The burnt mass was with difficulty fusible at a high temperature. This material would be suitable for the manufacture of a fire-brick in which a very high degree of refractoriness was not called for.

BORING MACHINES.

Dr. E. Gilpin,

Deputy Commissioner Public Works and Mines.

Sir,—I beg to report on the Government Core Drills, and to submit the following memorandum of progress during the fiscal year.

The following is a list of the machines now in possession of the Mines Depaatment:—

No. 1.—A "Calyx" steam drill with a capacity of 1,000 feet.

No. 2.—A steam diamond drill boring to guaranteed depth of 800 feet.

No. 3.—A hand power diamond drill which bores to 350 feet.

No. 4.—Is the same as No. 3.

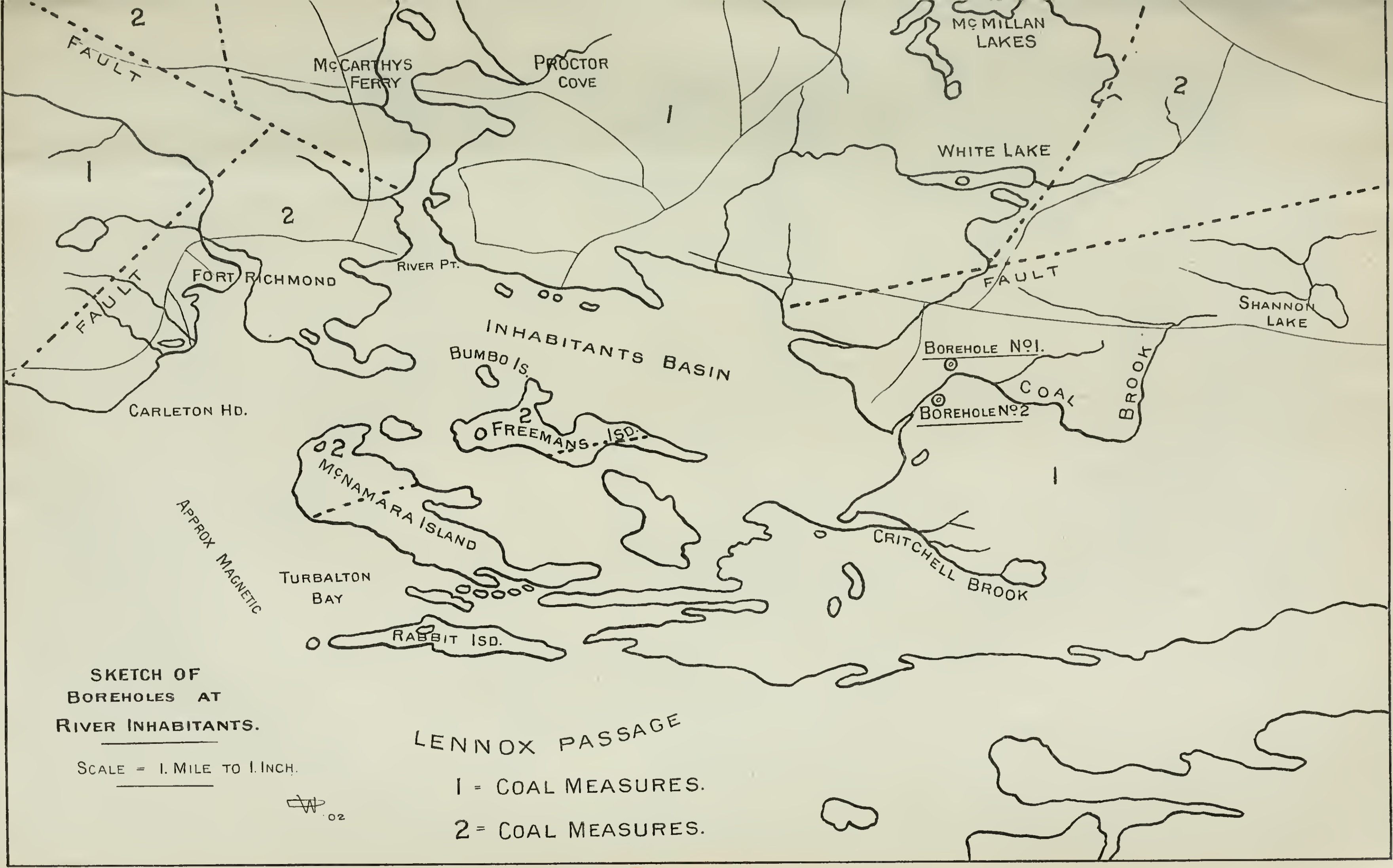
No 5.—A duplicate of No. 1 drill.

No. 6.—This drill recently purchased by the Department is also on the "Calyx" pattern and bores to a depth of 3,000 feet. The largest core cut by it is over 6 inches in diameter. It contains several improvements in construction over Nos. 1 and 5.

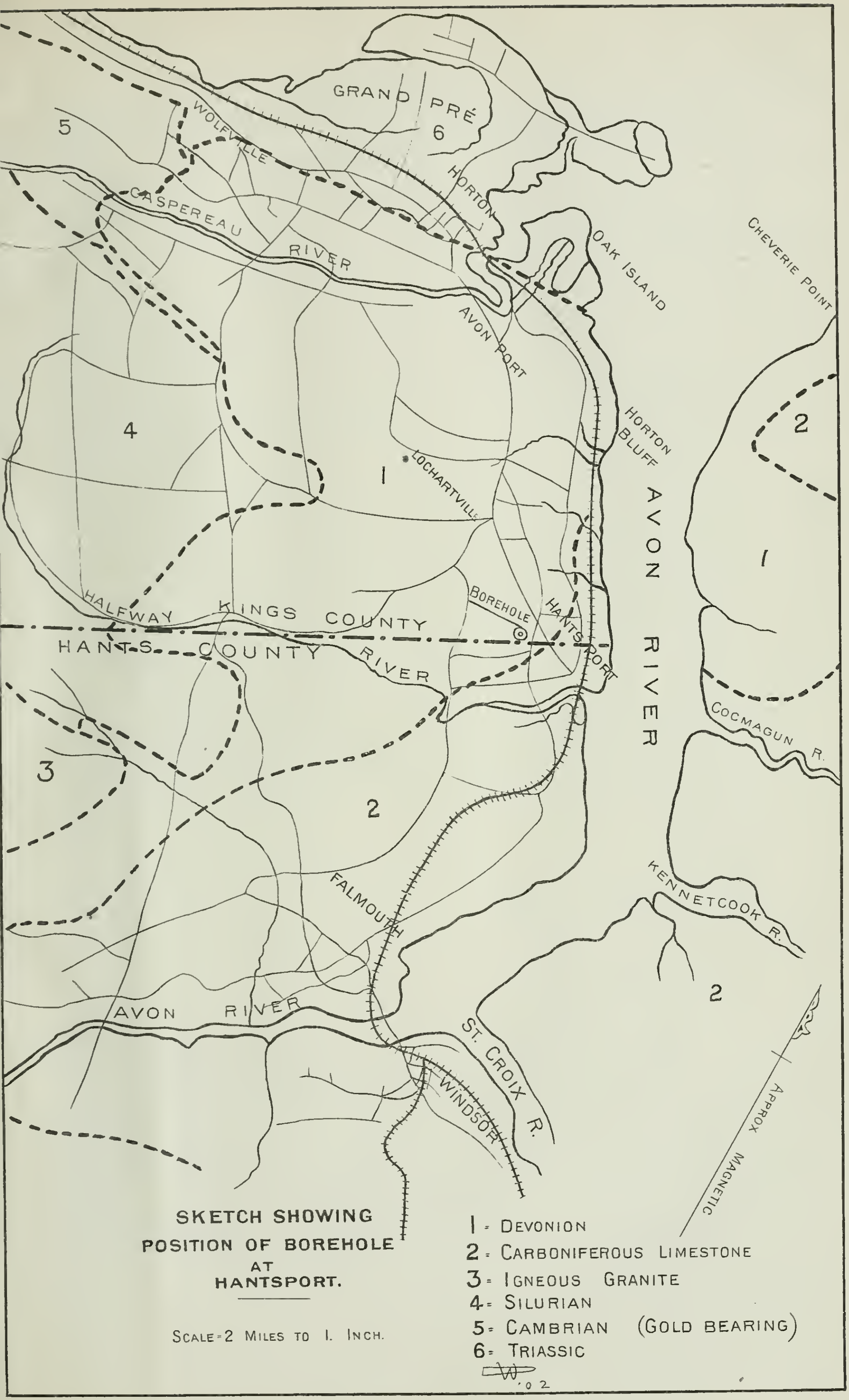
Another "Calyx" hand drill boring to 300 feet has been ordered, but has not yet arrived.

ITINERARY AND OPERATION.

Drill No. 1.—No. 1 drill after completing No. 2 hole at Kennetcook (see Mines Report, 1901,) was transported to River Inhabitants Basin, in Cape Breton, in December, 1901. Boring was commenced on March 11th, 1902, at a point on the north bank of Coal Brook (see hole No. 1 on plan 1, River Inhabitants), near the proved outcrop of a seam approximating 3 feet in thickness. The following record shows the strata passed through in this hole, which was finished on April 23rd, 1902.


SKETCH OF
BOREHOLES AT
RIVER INHABITANTS.
SCALE = 1. MILE TO 1. INCH.
1 = COAL MEASURES.
2 = COAL MEASURES.
LENNOX PASSAGE
INHABITANTS BASIN
MC. MILLAN LAKES
WHITE LAKE
SHANNON LAKE
PROCTOR COVE
MC. CARTHYS FERRY
FORT RICHMOND
RIVER PT.
CARLETON HD.
BUMBO IS.
FREEMANS ISD.
MC. NAMARA ISLAND
TURBALTON BAY
RABBIT ISD.
BOREHOLE NO. 1.
BOREHOLE NO. 2
COAL BROOK
CRITCHELL BROOK
FAULT
FAULT
FAULT
APPROX MAGNETIC
1
1
1
2
2
2
2
2
2
W. 02

PLAN No. 1.



SKETCH SHOWING POSITION OF BOREHOLE AT HANTSPORT.

SCALE = 2 MILES TO 1. INCH.

PLAN No. 2.

SECTION OF HOLE NO. 1.

MATERIAL.	Thickness of Strata.		Total Depth from Surface.	
	Ft.	In.	Ft.	In.
Surface Material	10	......	10	......
Shale	19	......	29	......
Coal	.....	4	29	4
Shale	17	6	46	10
Sandstone with calcareous and shale bands	24	......	70	10
Bituminous shales	3	2	74	......
Shale	7	.....	81	......
Layers of shale and sandstone	41	......	122	......
Shales	44	.. ..	166	......
Sandstone with thin bands of Argillaceous shale and pyritous layers	22	.....	188	......
Sale with alternate layers of sandstone	262	......	450	.....
Shales	70	. ..	520	......

In the above hole calcite and fossil shells showed at 100 feet. The dip changed from 30° to 45° and as the above mentioned seam which should, if regular, have been intersected within 250 feet was not encountered at all, it is probable that a fault occurs.

At the suggestion of Mr. Hugh Fletcher of the Geological Survey, the drill was then moved to the westward about 800 feet, (See hole No. 2 on plan 1), and boring was commenced in the bed of the river on Sept. 18th, 1902. The rock at this 2nd hole dips westerly at a flat angle.

SECTION OF HOLE No. 2.

MATERIAL.	THICKNESS OF STRATA.		TOTAL DEPTH FROM SURFACE.	
	Feet.	Inches.	Feet.	Inches.
Blue clay and hard broken sandstone	8	4	8	4
Dark soft, argillaceous shale	10	......	18	4
Grey sandstone, coarse and hard	5	......	23	4
Dark argillaceous shales and fossil shells and ironstone bands	46	......	69	4
Light colored shale	8	......	77	4
Dark argillaceous shale	58	......	135	4
Light colored shale	20	......	155	4
Dark argillaceous shale	13	2	168	6
Bright coal	1	8	170	2
Hard grey sandstone, with bands of dark shale and small coal seams	50	.....	220	2
Dark shales and sandstone bands	33	....	253	2

SECTION OF HOLE NO 2.—*(Continued.)*

MATERIAL.	THICKNESS OF STRATA.		TOTAL DEPTH. FROM SURFACE	
	Feet.	Inches.	Feet.	Inches.
Coal	.....	4	253	6
Grey sandstone with shale bands	30	.....	283	6
Light shale with ironstone bands	17	......	300	6
Hard shaly coal	1	6	302	......
Light shale	8	.....	310	......
Hard grey sandstone	29	.....	339	......
Coal, hard and impure	.....	6	339	6
Light Argillaceous shales	4	.....	343	6
Light grey sandstone, banded and striped	28	6	372	......
Dark shale containing fossil shells	5	.....	377	......
Fine grained, light grey sandstone	6	......	383	......
Dark grey shale, full of fossil shells and containing fine bands of ironstone	12	......	395	......
Light grey sandstone, with occasional thin layers of shale, sometimes bituminous	61	......	456	......
Grey and greenish shales	21	.....	477	......
Dark argillaceous shales with small fibres of calcspar and pyrites, also bands of ironstone	53	......	530	.....
Soft light sandstone with hard bands	25	......	555	......
Dark argillaceous shales with ironstone bands	18	......	573	......
Red shales with grey iron bands	8	......	581	......
Dark shales	3	......	585	......
Soft light sandstone with shaley bands	49	......	634	......
Dark argillaceous shales	45	.....	637	......
Hard light colored micaceous sandstone	41	......	678	......
Dark argillaceous shales more or less bituminous, and containing fossil plants and shells	45	.....	723	.....
Soft grey sandstone	4	......	727	......
Dark argillaceous shales showing calcspar	14	......	741	.....
Grey sandstone with dark bands	3	.....	744	.....
Dark fossiliferous shale	35	.....	779	.....
Hard grey sandstone	4	....	783	......
Very dark shales, containing fossil shells and plants	34	....	817	.....
Dark shale with reddish bands	3	......	820	.....
Dark shales showing fossil and containing dark coaly bands	58	......	878	......
Light shales with small reddish bands and streaks of ironstone	33	.....	913	.....
Fine grey sandstone	4	.....	917	......
Bituminous shales and bands of sandstone	32	.....	949	.....
Hard grey sandstone	3	......	952	......
Light coaly shale	5	......	957	......
Hard grey sandstone with fibres of calcite	22	......	979	......
Dark coaly shale with fossils	27	......	1006	......
Hard grey sandstone with calcite seams	14	.....	1020	.....

The hole was finished on August 16th, 1902, and through delays for various causes, the actual time employed in boring was 570 hours, making the rate of boring per hour equal to 1.7 feet, the total cost of hole was $1,822.50, made up as follows:—

Labour and board	$1,217 60
Management, etc	459 00
Fuel (coal)	63 00
Shot	67 50
Oil, waste, lighting, etc	15 40
	$1,822 50

Thus the cost per foot was $1.77.

The drill was then moved to Glendale, in Inverness County, and boring commenced on September 18, 1902, on the east branch of the River Inhabitants. The different strata penetrated were as follows:—

MATERIAL.	THICKNESS OF STRATA.		TOTAL DEPTH FROM SURFACE.	
	Feet.	Inches.	Feet.	Inches.
Surface material	15	......	15	......
Dark shale (fossils)	40	......	55	.....
Soft red shale with limestone nodules	19	.....	74	......
Dark shales, showing lime in nodules and veins	32	......	106	......
Hard grey sandstone with calcite veins	8	.....	114	......
Dark banded shale	77	......	191	......
Hard red shale with grey stripes	22	......	213	.....
Dark banded shale	42	......	255	.....
Various colored shale with harder nodules	21	......	276	......
Hard dark shale	16	......	292	.....
Red and green mottled shale (calcareous)	5	......	297	....
Dark argillaceous shale with calcite veins	12	.....	309	......
Hard grey fine grained sandstone with calcareous layers	8	.....	317	......
Dark shale with reddish bands	90	......	407	.....
Dark coaly shales	10	.....	417	.....
Red shales with calcite veins	9	.....	426	......
Various colored shales	68	......	494	......
Grey sandstones with dark shaley bands	26	...	520	.....

This hole was finished on October 15th, 1902, and as far as the experience with these machines has proved, it is a record drilling operation, both as to time and expense. As will be seen from above section, 520 feet were bored and 165 hours were taken in the work, making 3.1 feet bored per hour.

The hole cost $0.93 per foot, as will be seen from the following account of expenses:—

Men's labour and board	$365 16
Management, etc	72 00
Fuel	26 00
Shot	18 00
Oil, waste, etc	3 80
	$484 96

DRILL NO. 2.

An unfortunate series of accidents, combined with bad ground prevented progress in the explorations at the Drummond Colliery, and shortly after the intersection of the 9 foot seam, mentioned in last year's report, operations were abandoned, and the drill remained idle until the end of the fiscal year, shortly after which it was moved to a point near the Fox Brook road, about 2 miles from the Drummond Colliery, and boring was commenced there.

DRILL NO. 3.

Between October, 1901, and January, 1902, two holes were bored with this drill at the head of Lingan Basin, and the Mullins seam, so-called, was intersected at the following depths:—

HOLE No. 1.

MATERIAL.	THICKNESS OF STRATA.		TOTAL DEPTH FROM SURFACE.	
	Feet.	Inches.	Feet.	Inches.
Shales	2	......	2	.....
Coal	1	.....	3	.....
Shales	22	......	25	......
Coal with a parting of 1½ inch in the seam	4	6	29	6

HOLE No. 2.

MATERIAL.	THICKNESS OF STRATA.		TOTAL DEPTH FROM SURFACE.	
	Feet.	Inches.	Feet.	Inches.
Clay	9	6	9	6
Shales	15	......	24	6
Coal	1	1½	25	7½
Shales	22	.....	47	7½
Coal	4	10	52	5½

For some months the drill was idle; but in the spring of 1902 it was taken by Mr. A. J. McDonald to prove the extent of the basin to the south-east of Sydney. I have been unable to obtain from him any records of the operations there.

DRILL NO. 4.

This drill was taken from Musquodoboit to Middle Stewiacke, and boring was commenced on April 3rd, 1902. Three bore-holes were bored, the deepest being 445 feet, but nothing of value was discovered. Though this is a hand drill and only guaranteed to bore 350 feet, 445 feet was done in this latter hole and during the last 100 feet of boring the motive power used was steam. A record of the cost furnished me by Mr. Creelman, the operator, reads as follows:—

Labor	$169 50
Bond	94 92
Management, etc	139 50
Use of engine	38 00
Truckage, freight, oil	6 00
Fuel (say)	20 00
Carbons (say)	300 00
	$767 92

Thus it appears that the cost per foot was $1.72.

Drilling stopped in October and the drill was taken to South Maitland.

DRILL NO. 5.

On September 30th, this drill, which has been boring continually in the same hole, (See plan 2, HANTSPORT), reached a depth of 727 feet and boring was still in progress with the intention, if necessary, to go to 1,500 feet. For this purpose 500 extra feet of rods was procured.

The following record of the hole shows the strata passed through:

MATERIAL.	THICKNESS OF STRATA.		TOTAL DEPTH FROM SURFACE.	
	Feet.	Inches.	Feet	Inches.
Sandstone	8	......	8	.....
Slate	4	.....	12	......
Sandstone	16	......	28	......
Clay	3	......	31	.....
Sandstone	11	......	42	......
Clay	11	......	53	......
Slates and sandstone	66	.....	119	......
Slate	5	......	124	......
Sandstone	5	......	129	......
Slate	10	.....	139	......
Sandstone	6	......	145	.....
Slate	8	......	153	.....
Sandstone with several thin bands of clay and bituminous shale	27	....	180	....
Slate	8	......	188	.....
Sandstone	34	.....	222	......
Slate	5	......	227	......
Sandstone	47	.....	273	......
Slate	4	....	277	.....
Sandstone	15	......	292	.....
Carbonaceous shales	19	....	292	......
Slate, sandstone and clay	10	......	321	.....
Slate	14	......	335	......
Sandstone	12	......	347	......
Hard shales with small band of sandstone	28	......	375	......
Hard shales on slates generally dark and fossiliferous in places	375	......	750	......
Hard slaty strata	72	......	822	......
Sandstone with bands of slate	163	......	985	.....

Thin bituminous layers occurred at the following depths 212 feet 238 feet and 267.

DRILL NO. 6.

During the summer a new Calyx drill with a capacity of 3,000 feet and cutting a hole 7⅝ inches in diameter was purchased, and delivery was taken on September 12th.

The drill was loaned to a company of Pictou County operators who intend testing the unproved ground just north of the "New Glasgow Conglomerate," so-called, where, if new workable coal is discovered, the drill's worth will be proved many times over and even if the strata is proved barren, its benefit may be equally estimated in preventing the future fruitless expenditure of money and effort which might otherwise be turned in a direction more beneficial to the Province. Boring commenced on September 24th at a point 1½ miles north of New Glasgow, and about ½ mile west of the East River, and about 70 feet has been accomplished by the end of the month, the cores consisting of shales and sandstones.

D'ARCY WEATHERBE, C. E,

Mines Dept.

PROVINCIAL MUSEUM
AND SCIENCE LIBRARY.

PROVINCIAL MUSEUM,
HALIFAX, 23rd January, 1903.

TO E. GILPIN, JR., ESQ., L.L.D., &C.
Deputy Commissioner of Public Works and Mines:

SIR,—I respectfully present herein a report on the Provincial Museum of Nova Scotia and the Provincial Science Library, for the past year.

PROVINCIAL MUSEUM.

During the year 758 accessions were catalogued, representing 2021 specimens. These, as before, almost entirely relate to the province.

Under your directions I went to Cape Breton during the past summer and spent some weeks in collecting in the country from Sydney to Louisbourg, and also at isolated points in Victoria, Inverness and Antigonish counties. As a result were obtained seven boxes (over 265 specimens) of miscellaneous minerals and rock samples from very many localities, illustrating the coal-measures and pre-carboniferous formations of those sections. In response to application then made to the Dominion Iron and Steel Company, we have received from Mr. Meissner, mineral engineer of the company, a full set of carefully selected samples of materials used in the manufacture of pig iron and steel, and the products and bye-products of the various works. Mr. Meissner has also since sent us a box of specimens of coals from various seams, iron ores, etc., and has very kindly promised to send us specimens in the future.

For the last Provincial Exhibition I was directed to prepare and exhibit a collection of Nova Scotian minerals. A collection of four cases, sixty square feet, was accordingly prepared representing cabinet specimens of the various ores and other minerals and clays, etc., found in the province, labelled with full particulars. The collection contained specimens from a number of newly developed properties as well as older ones and fairly represented all but some of the rarer minerals. A separate case of gold specimens was also exhibited by the department.

The determination and labelling of old material has been continued throughout the year as time permitted, with the result that some interesting specimens have been brought to light.

The collection of woods presented by Mr. Starr has been arranged in two upright glazed cases, and has been placed in the reading-room of the Science Library for want of space in the Museum.

The dry mollusca (shells) have been arranged systematically and labelled as far as possible, they having been unrevised since their removal to the present quarters.

Data relating to the collection of Antigonish County rocks made by the late curator, have been discovered in an old note-book and have been clearly transcribed and placed with the specimens, adding greatly to their scientific value.

All material in drawers has been roughly revised and general labels placed therewith, referring in many cases to literature in reference to it.

Dr. A. H. MacKay has kindly re-determined and arranged the collection of Nova Scotian fresh-water sponges presented by him a number of years ago and has added thereto half of the type-specimens of *Heteromeyenia macouni* from Sable Island, recently described by him.

Pasteboard mineral trays have been obtained and add much to the neatness of the mineral and other collections, particularly in the case of fragmental specimens.

The Weldon collection of rare delft-ware and porcelain referred to in the last report, has been deposited in the Museum by Mrs. Weldon's executors and has been arranged according to potteries, with descriptive labels. It illustrates the history and growth of the pottery industry.

A collection of Nova Scotian apples and pears has been put up by Prof. Sears of the School of Horticulture to replace the specimens previously exhibited, which had been over-ripe when prepared.

Systematically recorded observations on bird migration have been received and added to those of previous years. Those who assisted in this work were R. W. Tufts of Wolfville, L. E. Allen of Salem, Yar. Co., E. C. Allen of Arcadia, Yar. Co., J. W. McL. Bouteillier of Sable Island, and J. Crowell of Seal Island lighthouse. The observations of Messrs. Bouteillier and Crowell are of particular interest as shedding light on bird movements in rather unexplored but important outposts of the province.

Among various mineralogical and geological specimens received may be mentioned a large number from F. H. Mason, assayer of Halifax; minerals from New Ross from C. Keddy; fossils and rock specimens from R. Robson, assistant-manager of Sydney Mines (N. S

Steel and Coal Co.); a collection of rock specimens from Prof. Lee Russell, late of the Normal School; fossils, etc., from W. H. Prest; local geological specimens from T. V. Hill; minerals, etc., from A. G. Morrison, W. R. McDonald, Kenneth McIntosh, G. J. Mackintosh, J. D. Copeland, H. C. V. LeVatte, Arch. McDonald, and C. L. Mitchell, and an amethyst vein in granite near Halifax from J. Kline. Specimens from various boreholes throughout the province have been received from the Mine Department. R. F. Eagar has loaned a collection of one hundred Nova Scotian mineral specimens collected and named by the late Prof. Henry How.

Henry S. Poole has presented an exceedingly interesting specimen of supposed worm trails from slate at the syncline at Green Bank, Point Pleasant, Halifax. This is probably one of the best evidences of fossils that have yet been found in the rocks of our gold-measures whose age is as yet only provisionally assigned to the Lower Cambrian.

The Robb Engineering Co. has given us a set of samples representing the various materials employed in its business.

In the biological department mention may be made of the following accessions:—Tautog (*Tautoga onitis*), a fish new to the province; Bonito (*Sarda sarda*), a very rare fish in these waters, from J. Doherty; a Man-o'-war Bird (*Fregata aquila*), new to the province; Ring-billed Gull (*L. delawarensis*) from F. C. Bell; nest and eggs of Ipswich Sparrow (*A. princeps*) from Sable Island, the only known breeding place of the species, from J. W. McL. Bouteillier; birds from R. W. Tufts; Moose skull with very remarkable abnormal antlers from Sheet Harbour; skulls and small mammals, etc., from F. Reid; several Blue Crabs (*Callinectes sapidus*), new to the province, taken at Cow Bay; an unusually large Lobster (18½ lbs.) from R. P. Barkhouse; and a Giant Swallowtail Butterfly (*Papilio cresphontes*), new to the province, from Miss Helen King.

The herbarium, was increased by a large number of plants from Wyses Corner, N. S., and Labrador, from W. H. Prest, and 214 plants from Sable Island, representing very fully the flora of that island, from Mrs. Cotton Almon. The samples of grain in the stalk have been replaced by five new cases which have been neatly glazed, greatly improving their appearance and aiding in their preservation.

To Judge Charles R. Corning of Concord, N. H., we are indebted for an excellent bust portrait, framed, of Sir John Wentworth, Governor of Nova Scotia, from the painting by Tenney in the State House, Concord, copied in turn from the original by Copley at Portsmouth, N. H. Alfred E. Haliburton-Gilpin has donated a number of stone implements, coins, etc.

A set of the Canadian Geological survey maps has been bound and is accessible to visitors, and is much used by mining men and others.

A set of petrographical and mineralogical microscopic slides has been lent to Prof. E. Haycock, of Acadia College, for the purpose of special research, and some specimens of minerals have also been loaned the Mining School of Halifax. This is one of the ways in which our collections may prove of assistance in the work of that institution.

As this report is being prepared, several cases of minerals from the Paris and Glasgow exhibitions, have been received and will be opened and placed in the collection.

A list of donors is appended.

DONORS.

Allen (E. C.), Arcadia; Allen (L. E.), Salem: Almon (A.), Sydney; Almon (Mrs. Cotton); Annand (Frederick W.); Archibald (Charles); Archibald (Sheriff D.); Arvine (Dr.), Can. Oil & Coal Co., East Bay.

Barkhouse (Robert P.), Chester; Beazley & Henrion; Bell (Frank C.); Bishop (Watson L.), Dartmouth; Blackwell (H.); Boak (Hon. Sir Robert); Bouteillier (James W. McL.), Sable Island; Boutilier (Arthur); Brown (H. G.), Sydney; Brown (R. H.)

Carlyle (Fred), Waverley: Carrol (J.); Challoner (Capt. J. L.), Mira; Clarke (Jas.), Sydney; Copeland, (J. D.), Antigonish; Corning (Judge Charles R.), Concord, N. H.; Crowdis, (G. H.), Louisbourg; Crowell (John), Seal Island Lighthouse, Yar. Co.

Dennehy (John F.); Doherty (Joseph), Prospect; Dominion Coal Co, Glace Bay; Dominion Iron & Steel Co., Sydney; Draper (Rev. T. F.), Louisbourg; Dusten (W. M.), Pictou.

Eastern National Copper Co., C. B. (per J. W. Regan); Eaton (Ralph S.), Kentville.

Faribault (E. R.), Ottawa; Farrell (Vincent F.); Findlay (Wm. H.); Finlayson (D., M. P. P.), Arichat; Fuller (F. L.), Truro.

Geological Survey of Canada, Ottawa; Gilpin (Alfred E. Haliburton); Gilpin (Dr. E., Jr.); Goudge (Walter M.)

Hampson (John E): Harrington (Arthur E.); Hicks (John H.) Bridgetown; Hill (T. Vardy).

Keddy (Charles), New Ross; Kelly & Dodge, Sydney; King (Miss M. Helen); King (Wm. C.), Wellington; Kline (John).

Lantz (P. B.), New Ross; LeVatte (H. C. V.), Louisbourg; Lindsay (Dr. A. W. H.); Lucas (F. E.), Sydney.

McDonald (Archibald), Whycocomah; McDonald (A.), manager Caledonia Colliery, Glace Bay; McDonald, (W. B.); McDougall (H. F.), Christmas Island, C. B.; McFadyen (M.), Mabou Harbour, Inv. Co.; Mackintosh (Geo. J.); McIntosh (Kenneth), St. George's Channel; MacKay (Dr. A. H.); MacKenzie (Jas. W.); MacKie (C. J.); Macpherson (Jos.), North Sydney; McQuarrie (A. P.); Mason (F. H.); Mason (T. J.); Maxwell (Jas.), Westville; Meissner (C. A.), Sydney; Mills (C. H.), Chester Basin; Mills (Capt. J. W.), MacKenzie River, N. W. T.; Mines Department of N. S.; Mira Brick Co., Sydney; Mitchell (C. L.), Louisbourg; Morrison (A. G.); Moseley (E. W.), Sydney; Murphy (Dr. Martin).

New Glasgow Foundry, New Glasgow; Nichols (Arthur L.), Berwick; N. S. School of Horticulture (per Prof. F. C. Sears), Wolfville; N. S. Steel and Coal Co., (per R. Robson), Sydney Mines.

Payson (W. W.), Deep Brook; Perrin (J.) McNab's Island; Petrie (L. A.), Glace Bay; Phillips (Joseph L.), Mira Gut; Poole (Henry S); Port Hood Coal Co.; Prest (Walter H.), Bedford; Provincial Farm (per F. L. Fuller), Truro.

Quigley (Wm. S.)

Reid (Frank H.), Middleton; Robb Engineering Co., Ltd., Amherst; Robson (Robert), Sydney Mines; Ross (Howard), Sydney; Routledge (T.), Sydney; Russell (Prof. Lee), Truro.

Sears (Prof. F. C.), Wolfville; Silver (Arthur P.); Stayner (Charles); Stewart (F. I.), Sydney; Strachan (John), President, Battye Brick & Freestone Mfg. Co.; Sutcliffe (Mr. & Mrs. Edw. B.)

Townsend (J. H.), Tangier; Tufts (Harold F.), Wolfville; Tufts (Robie W.), Wolfville.

Vanbuskirk (A. C.)

Waverley Gold Mining Co., Waverley; Weatherbe (D.); Weldon (executors of Mrs.); Whitman (E. C.), Canso; Whitten (R. B.), Sydney.

PROVINCIAL SCIENCE LIBRARY.

During the past year an extensive but most necessary work has been accomplished in the preparation of new accession-books for the society publications in the Library, embracing the exchanges of the Institute of Science. As referred to in my last report, the old accession-books of the Institute, through rapid growth of the Library, had become inadequate and much involved. Furthermore, in order to know just what publications of a certain society or institution were in the Library, cards and accession-books had both to be consulted. The whole has now been combined and condensed into one set of three folio accession-books, giving ample room for incoming publications, alphabetically arranged according to location of society or institution. This arrangement seems to be the only one possible in a special library such as this that embraces the yearly publications of several hundreds of miscellaneous societies in all parts of the world, making special methods necessary that are not required in ordinary libraries.

The preparation of these record books has made appeal to the shelves and cataloging *de novo* necessary in many cases. We are already, however, reaping the benefit of the systematically arranged books, in the ease with which accessions are now dealt with in comparison with the difficulty experienced and time consumed in the past. These accession-books were prepared by Mrs. Piers.

The manuals and other works of a non-periodical nature, consisting of those received from the Legislative Library, and by purchase and otherwise since then, I hope to have catalogued in the ordinary way on cards during the present year, and also to make some advantageous re-arrangement.

During the past year about five hundred dollars' worth of new manuals and other comprehensive treatises have been added, embracing some of the most modern and highly recommended works on such subjects as mining, prospecting, metallurgy, assaying, applied chemistry, explosives, mine-surveying, geology, mineralogy, lithology, agriculture, horticulture, botany, zoology, meteorology, water-examination, etc. Much remains yet to be done in strengthening those departments, but the "manual" part of the Library is now beginning to have a modern facies.

The Library is being more largely patronized, and is frequented by students as well as men engaged in industries to which its works apply.

Besides the large number of exchanges received through the Institute of Science, accessions have also been added through the Mining Society of Nova Scotia and by further transfers from the Legislative Library, the Department of Mines, Dr. Gilpin, and Dr. A. P. Reid.

Some fifty-seven volumes have been placed in the binder's hands and will soon be again on the shelves. Very much, however, yet remains to be done in this respect, the binding of periodicals being greatly in arrears. Binding seems to be one of the first duties of a library such as this, as it is next to impossible otherwise to keep in good condition and ready for consultation the large number of very valuable periodicals issued in part form. I feel it would also be advisable to cheaply lace in stock covers the foreign periodicals. This could be done from year to year at an exceedingly small outlay and would, I believe, be quite satisfactory.

During the winter of 1901–02 fortnightly meetings of the Botanical Club of Halifax were held in the reading-room for work in microscopical plant investigation, and the Mining Society has also met there.

I have the honor to be, Sir,

Your most obedient servant,

HARRY PIERS,

Curator and Librarian.

I remain, Sir,

Your obedient servant,

E. GILPIN, JR.,

Deputy Commissioner of Public Works and Mines and Inspector of Mines.

TABLES.

LIST OF MINERAL LEASES (OTHER THAN GOLD.)

IRON.

No. of Lease.	Name of Owner.	County.	Agent or Owner.	Address.
289	Est. Greener, J. et al	Cape Breton.		
232	Brookman, P	"		
292	Smith, W	"		
104	McKenzie, J. W	"		
258, 259, 260, 261	McPherson, M A	"		
238	Matheson, A	"		
43, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 87, $\frac{93}{44}$	Bartlett, J. H	Pictou		
68, 71, 83	Nova Scotia Steel & Coal Co.	"		
61	Cameron, J. A	"		
82	McMillan, J. R.	"		
10	Fraser, W. J.	Inverness		
122	Wilson, J. W. et al	"		
57	Cape Breton Iron Co.	"		
89	McKenzie, J. A	"		
99	Fraser, W. A	"		
7	McDonald, L.	Antigonish		
8, 9. 10, 11	Cowlan, G. B	"		
16	Working Mens P. D. & M. Co.	"		

14, 17	Wilkie, C. N.	Antigonish		
1, 2	Nova Scotia Steel Co	Guysboro		
1	McIntosh, J. C.	Hants		
12	Matheson, J	Richmond		
	COPPER, LEAD, ETC.			
126	Matheson, A.	Cape Breton.		
286, 287, 70/95, 106	Cape Breton Copper Co	"		
105, 181	Burchell, J. E.	"		
94	McKenzie, D	"		
244	Granger, B	"		
116	Greener, J	"		
228	Young, W. N	"		
277	McInnes, H.	"		
6	McLennan, J. S	Victoria		
5	Colonial Copper Co	Colchester		
136	Wallace River Copper Co.	Cumberland.		
58, 59, 62, 102, 103	Inv. Mg. Co	Inverness		
55	Cheticamp Gold Mg. Co	"		
5	Fraser, J. H	Antigonish		
12	McDonald, —	"		
13	McDonald, A. K.	"		
88	Holmes, S. H	"		
3	Simpson, H. D. et al	Halifax		
139	McPherson, W. A.	Cumberland.		
5	Willis, E. J. et al	"		
4	Cameron, J. J.	Guysboro		
94	H. C. Pray	Pictou		

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*(Continued.)*

COAL.

NAME OF LEASE.	NAME OF OWNER.	COUHTY.	AGENT OR OWNER.	ADDRESS.
	COAL.			
83, 84, 85	Barton, A. McG.	Pictou		
3/1, $\frac{1}{23}$, $\frac{2}{42}$, 3, 4, 69	Acadia Coal Co	"		
5/12 $\frac{6}{13}$, $\frac{7}{14}$, 66	Intercolonial Co	"		
46, 8/6, 68, 70	Nova Scotia Steel & Coal Co.	"		
10/24	Richey, M. H.	"		
11/11, 45, 9/10	Gray, B. G.	"		
56, 22/51, 74, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104	Canada Coals & R'y. Co.	Cumberland.		
19/44, 55, $\frac{16}{6}$, $\frac{17}{7}$, $\frac{18}{18}$, $\frac{20}{52}$, $\frac{21}{55}$, 61, 62, 70, 71, 72, 73, 75, 76, 77, 78 79, 81, 82, 83, 84, 85, 87, 88, 90, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 141, 118, 119, 120, 121, 122, 123, 124, 89, 93, 60, 66, 67, 68, 69, 125a, 126, 128, 129, 135, 137, 138	Cumberland Rail'y. Coal Co.	"	J. R. Cowans.	Springhill
8/5	Lawson Coal Rail'y. Co.	"		
134	Givan, E. W. et al	"		
6/12	Robertson, Hugh	"		
15	Prospect Mining Co.	"		

9/22, 10/23, 11/28, 12/29, 13/30	Styles Mining Co.	"		
23/53	Strathcona Coal Co.	"		
57	Salt Springs Coal Co.	"		
26/16	Minudie M. & T. C.	"		
60, 61	Tupper, C. H.	"		
94, 65	Faulkner, G. E.	"		
80	Gue, T. R.	"		
86	Rutherford, J.	"		
91	Fraser, H. R.	"		
131	Hickman, J. S.	"		
34	Weatherbe, U. J.	"		
125	Francklyn, Geo. E.	"		
14	Joggins C. M. Association	"		
24/47, 25/9	Boston Coal Mg. Co.	"		
94	Ripley, E.	"		
42/52	Moore, R. G. M.	"		
13/79, 1/27, 2, 3, 28, 29, 30	Nova Scotia Steel & Coal Co.	Cape Breton.		
173, 58/67	Weatherbe, R. L.	"		
111, 164	Sydney Coal Co.	"		
45/5, 46/28, 47/29, 50/40, 51/41, 52/42, 60/54, 61/55, 62/56, 63/57, 64/58, 65/59, 66/60, 67/61, 68/62, 69/63, 108, 109, 110, 188, 207, 140, 252, 253, 254, 255, 256, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 278, 279	Dominion Coal Co.	Cape Breton.	H. Donkin	Glace Bay
290	McDonald, D. A.	"		
283	Emmett, J. H.	"		
117, 246	Hamilton, A. G.	"		
142	LeCras, Henry	"		

LIST OF MINERAL LEASES (OTHER THAN GOLD.)—*(Continued.)*

COAL.—*(Continued.)*

No. of Lease.	Name of Owner	County.	Agent or Owner.	Address.
220, 214	Cayley, H. St. Q	Cape Breton.		
179, 180, 168, 190, 208, 223, 241, 284.	Roberts, F.	"		
130	Mitchell, A. B.	"		
212, 131, 128, 128, 134, 135, 136, 139, 144, 182, 200, 219	Moseley, E. T.	"		
138, 149, 184, 224	White, A. J.	"		
141, 177, 244, 213, 112, 113, 114, 115, 116	Cumberland Ry. & Coal Co.	"		
235, 146, 193, 194, 216	Gowie & Block House Collieries.	"		
166	Dunn, J.	"		
242	Can. Oil & Coal Co.	"		
247	McNeil, H. F	"		
161	Routledge, T.	"		
282	Moseley, E. W	"		
169, 170, 183	McVey, Jas.	"		
178	Routledge, E.	"		
165	Stephens, L. H,	"		
163, 185	Hamilton, C. F.	"		
199	Copeland, J. D.	"		
291	McCuish, D. A. et al	"		
243, 171, 174	Gorham, J. W	"		

211, 233, 236	Burchell, J. E.	"		
215	McKinnon, D. L.	"		
234	Ross, H.	"		
186, 187, 202, 205, 206, 209	Kennelly, D. J.	"		
210	Harold, T. C.	"		
196, 237, 222	Routledge, T.	"		
201, 221	Hickey, C.	"		
192	McKenzie, J. A.	"		
175	McDonald, J. W.	"		
225	Cossitt, G. G.	"		
167	Murray, J.	"		
191, 197	McVicar, J	"		
229	Matheson, D.	"		
218	Morrison, D.	"		
217	Townshend, James	"		
248	McMillian, J.	"		
275, 276	Petrie, L. A.	"		
258, 259, 260, 261	McPherson, M. A.	"		
1/13, 6/4, 7/10, 26, 29, 30, 111, 112, 113	Port Hood Coal Co.	"		
251	Caldwell, T.	"		
226	Stephen, A.	"		
231	Owen, J. M.	"		
7	Dominion Coal Co.	Victoria		
1, 2	Burchell Bros.	"	J. T. Burchell	N. Campbellton
8, 9	Fraser, J. W.	Inverness		
11	Dawson, G.	"		
13, 14, 15, 18, 19, 20, 23, 24, 25, 28, 40, 41, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 60, 61, 100, 101, 104, 105	Inverness and Richmond Coll. and Rail'y. Co., Ltd.	"		

LIST OF MINEARL LEASES (OTHER THAN GOLD.)—*(Continued.)*

COAL.—*(Continued.)*

No. of Lease.	Name of Owner.	County.	Agent or Owner.	Address.
3/11, 27	McKenzie & Mann	Inverness		
29, 30	Tremaine, E. D	"		
35, 38, 39	Ross, W.	"		
43, 44	Farquhar, J. A.	"		
31	Sutherland, W. A.	"		
32, 33, 34, 42	Wallace, T. A.	"		
63, 64, 65, 96, 97, 98	Taylor, Ira	"		
66, 108, 109	Lithgow, J. R.	"		
67, 68	McDonald, W. B	"		
69	McInnes, H.	"		
70, 71, 72, 77, 78, 79, 80	Roche, Wm.	"		
73, 74, 75, 76	Townshend, S.	"		
81, 110	Caldwell, T.	"		
82, 85, 88	Andrews, J. W.	"		
84, 83, 86, 87, 89, 90, 91, 92' 93, 94, 95	Sherman, C. E.	"		
106, 107, 114, 115, 116, 117, 118, 119, 120, 121	Mabou Coal Mg. Co.	"		
123	McCoil, A.	"		
34	Ross, Wm. et al	Richmond		
36	Hunt, J. J.	"		
1, 7, 8	Terminal City Co.	"		

3	Reynolds, W. K.	"		
5	Chisholm, W	"		
9	Lennoxville T. & C. Co.	"		
37, 11	Eastern Dev. Co	"		
13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33.	H. Pearl	"		
285	Dom. Coal Co.	"		
6	Est. T. K Jenkins	Colchester		
15	Corbett, J. E. et al.	Antigonish		

COAL—SALES.

NAMES.	1st Quarter.	2nd Quarter.	3rd Quarter.	4th Quarter.	Year 1902.	Year 1901
NOVA SCOTIA :						
Land Sales...	291,466	108,244	94,811	86,095	580,616	485.140
Sea Borne...	59,701	204,865	247,166	290,215	801,947	513,674
Total N. S...	351,167	313,109	341,977	376,310	1,382,563	998,814
New Brunswick.	86,799	76,829	75,557	80,153	319,338	349,994
Newfoundland .	33,349	16,707	23,700	31,531	105,287	105,620
P. E. Island....	17,438	1,310	13,447	24,008	56,203	53,773
Quebec........	190,666	68,936	408,627	575,751	1,243,980	1,017,046
West Indies....	......	3,006	2 976	....	5,982	....
United States..	155,131	218,673	168,323	209,255	751,382	590,086
Other Countries.	13,880	14,230	5,781	....	33,891	4,002
Total.......	848,430	712,800	1,040,388	1,297,008	3,898,626	3,119,353

COAL—GENERAL STATEMENT.

1902.	Produce.	Sales.	Colliery Consumption.	Workmen.
1st Quarter.........	960,639	848,430	62,283	18,644
2nd "	965,271	712,800	66,905	20,346
3rd "	1,133,363	1,040,388	70,036	13,294
4th "	1,307,596	1,297,008	79,790	9,351
Total........	4,366,869	3,898,626	279,014	61,635

TABLE A.—COAL TRADE BY COUNTIES FOR THE YEAR ENDED SEPTEMBER 30TH, 1902.

	CUMBERLAND.		PICTOU.		CAPE BRETON.		OTHER COUNTIES.		TOTAL.	
	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.	Raised.	Sold.
1st Quarter.......	135659	106126	119792	100955	701417	638378	3771	2971	960639	848430
2nd "	134815	99194	112812	92395	699748	506734	17896	14477	965271	712800
3rd "	128138	112622	126799	115423	848383	791829	30043	20514	1133363	1040388
4th "	146305	134899	156200	146610	968011	988026	33080	27473	1303596	1297008
Total........	544917	452841	515603	455383	3217559	2924967	84790	65435	4362869	3898626

TABLE B.—COAL TRADE BY COUNTIES.

	CUMBERLAND.	PICTOU.	CAPE BRETON.	OTHER COUNTIES.	TOTAL.
NOVA SCOTIA:					
By Land	107469	228146	231857	13144	580616
By Sea		21920	750851	29176	801947
Total	107469	250066	982708	42320	1382563
New Brunswick	211647	30631	71544	5516	319338
Newfoundland		102	102689	2496	105287
P. E. Island		27470	23262	5471	56203
Quebec	59233	125185	1049930	9632	1243980
West Indies			5982		5982
United States	74492	21929	654961		751382
Other Counties			33891		33891
Total	452841	455383	2924967	65435	3898626

COAL PRODUCE OF NOVA SCOTIA FOR YEAR ENDED SEPTEMBER 30TH, 1902.

COLLIERY.	Produce.	Sales.	Colliery Consumption.	
			Engines.	Workmen.
Chignecto	2243	690	1434	255
Joggins	58027	46968	9341	2026
Jubilee	1378	1163	115	....
Springhill	480676	401777	31266	8875
Scotia	493	423	....	....
Strathcona	2100	1820	225	48
Acadia	286582	245278	35318	5789
Intercolonial	206599	189183	15553	3871
N. S. Steel & Coal Co	22422	20922	1300	....
Dominion	2952578	2715866	120064	28429
N. S. S. & C. Co	241891	186539	50093	8525
Gowrie & B. House	19597	14880	3536	1120
Sydney Coal Co	7493	7682	72	139
New Campbellton	11939	9352	1775	1328
Port Hood	34517	33056	3002	822
Broad Cove	38334	23027	5920	408
	4366869	3898626	279014	61635

COAL.

NOVA SCOTIA EXPORTED TO THE UNITED STATES.

Years.	Tons.	Duty.	Years.	Tons.	Duty.
1850	118173	24 ad.	1877	118216	75
1851	116274	"	1878	88495	"
1852	87542	"	1879	51641	"
1853	120764	"	1880	123423	"
1854	139125	Free	1881	113728	"
1855	103222	"	1882	99302	"
1856	126152	"	1883	102755	"
1857	123335	"	1884	64515	"
1858	186743	"	1885	34483	"
1859	122720	"	1886	66003	"
1860	149289	"	1887	73892	"
1861	204457	"	1888	30198	"
1862	192612	"	1889	29986	"
1863	282775	"	1890	50854	"
1864	347594	"	1891	25431	"
1865	465194	"	1892	13883	"
1866	404252	"	1893	16099	"
1867	338492	$1.25	*1894	79837	40
1868	228132	"	†1995	73097	"
1869	257485	"	‡1896	174919	"
1870	168180	"	1897	106279	67
1871	165431		1898	98027	"
1872	154092	75	1899	153188	"
1873	254760	"	1900	624273	"
1874	138336	"	1901	590086	"
1875	89746	"	1902	751382	"
1876	71634	"			

NOTE.—The quantities given for the years 1852 to 1872 are on the authority of the Board of Trade, Philadelphia, and are probably under-estimated.

*Nine months only.

†NOTE.—After August 1st, 1894, duty on Round Coal 40 cents, on Culm or Slack, 15 cents.

‡Fiscal year begins October 1st, and ends September 30th. (Cap. 4, Acts 1893).

On July 24th, 1897, the duty was made 67 cents.

NOVA SCOTIA COAL SALES, 1785 TO 1902 (INCLUSIVE).

Year.	Sales.	Total.
1785	1,668	
1786	2,000	
1787	10,681	
1788		
1789		
1790		14,349
1791	2,670	
1792	2,143	
1793	1,926	
1894	4 405	
1795	5,320	
1796	5,249	
1797	6,039	
1798	5,948	
1799	8.947	
1800	8,401	51,048
1801	5,755	
1802	7,769	
1803	6,601	
1804	5,976	
1805	10,130	
1806	4,938	
1807	5,119	
1808	6,616	
1809	8,919	
1810	8,609	70,452
1811	8,516	
1812	9,570	
1813	9,744	
1814	9.866	
1815	9,336	
1816	8,619	
1817	9,284	
1818	7,920	
1819	8,692	
1820	9,930	91,527
1821	11,308	
1822	7,512	
1823	27,000	
1824		
1825		
1826	12 600	
1827	12,149	
1828	20,967	
1829	21,935	
1830	27,269	140,820
1831	37,170	
1832	50,369	
1833	64,743	
1834	50,813	
1835	56,434	
1836	107,593	
1837	118,942	
1838	106,730	
1839	145,962	
1840	101,198	839,954
1841	148,298	Forward 1,208,150
1842	129,708	
1843	105,161	
1844	108,482	
1845	150,674	
1846	146,506	
1847	201,650	
1848	187,643	
1849	174,592	
1850	180,084	1,533,798
1851	153,499	
1852	188,076	
1853	217,416	
1854	234,812	
1855	238,215	
1856	253,492	
1857	294,198	
1858	226.725	
1859	270,293	
1860	322,593	2,399,319
1861	326,429	
1862	395,637	
1863	429,351	
1864	576,935	
1865	635,186	
1866	558,520	
1867	471,185	
1868	453,624	
1869	511,795	
1870	568,277	4,927,339
1871	596,418	
1872	785,914	
1873	811,106	
1874	749,127	
1875	706,795	
1876	634,207	
1877	697,665	
1878	693,511	
1879	688,628	
1880	954,659	7,317.430
1881	1,035,014	
1882	1,250,179	
1883	1,297,523	
1884	1,261,650	
1885	1,254,510	
1886	1,373,666	
1887	1,519,684	
1888	1,576,692	
1889	1,755.107	
1890	1,786,111	13,910.136
1891	1.849.945	
1892	1,752,934	
*1893	1,485,914	
†1894	2,019,742	
1895	1,831,357	
1896	2,047,133	
1897	2,013,421	
1898	2,135,397	
1899	2,419,137	
1900	2,997,546	
1901	3,119,335	
1902	3,898,626	24,451,162
	Total.....	58,866,669

SUMMARY.

1785 to 1790	14,349	1841 to 1850	1,533,798
1791 to 1800	51,048	1851 to 1860	2,399,319
1801 to 1810	70,452	1861 to 1870	4,927,339
1811 to 1820	91,527	1871 to 1880	7,317,430
1821 to 1830	140,820	1881 to 1890	13,910,136
1831 to 1840	839,954	1891 to 1902	24,451,162

*Nine months only. Fiscal year begins Oct. 1 and ends Sept. 30. (Chap. 4, Acts 1893.)

STATEMENT OF LABOUR EMPLOYED DURING THE YEAR ENDED SEPTEMBER 30TH, 1902.

COLLIERY.	UNDERGROUND.				ABOVE GROUND.				CONSTRUCTION.				TOTAL.		HORSES.		PITS WORKED.
	Skilled Labor.	Laborers.	Boys.	Days' Labor.	Skilled Laboa.	Laborers.	Boys.	Days' Labor.	Skilled Labor.	Laborers.	Boys.	Days' Labor.	Persons.	Days' Labor.	Above.	Below.	Days.
Chignecto	3	1	....	1088	1	.....	......	229	11	12	....	8755	28	10072	2	......	200
Joggins............	81	84	19	46272	7	74	11	24872	.....	.....	....	.....	276	71144	5	9	250
Jubilee	14	1	1	1619	2	4	1	651	10	....	....	513	33	2783	1	.....	84
Springhill	532	454	125	264764	125	253	48	100775	......	....	....	.....	1537	365539	24	47	242
Acadia	270	265	69	147733	42	160	29	63154	......	....	....	......	835	210887	15	28	261
Intercolonial.......	230	158	87	113021	47	102	22	46511	3	5	1	1894	655	161426	12	21	273
N. S. S, & Coal Co.	29	28	3	12467	11	14	1	6633	5	4	....	2213	95	21313	1	....	275
Dominion C. Co ...	1152	1322	216	800033	273	336	52	196423	103	....	....	9515	3454	1005971	52	353	295
G. & B. H. Collieries	38	14	3	14410	14	10	2	6808	......	....	....	......	81	21218	1	3	262
N. S. S. & Coal Co.	394	85	92	150619	90	152	32	77085	38	25	....	19725	908	247429	8	44	278
Sydney C. Co......	17	8	.....	4710	2	5	.....	1573	....	....	....	....	32	6283	1	......	244
C. B. Coal Co	13	11	2	6345	4	3	3	2821	.....	....	....	.....	36	9166	... ..	.....	249
Port Hood C. Co...	13	9	2	21504	11	42	......	15408	2	13	....	4252	92	41164	5	3	176
	2786	2440	619	1584585	629	1155	201	542943	172	59	1	46867	8062	2174395	128	508	....

EXPENDITURE COAL MINES NOVA SCOTIA FOR YEAR ENDED SEPTEMBER 30TH, 1902.

	Shafts.	Slopes.	Levels.	Machinery.	Colliery Buildings.	Dwellings.	Wharves.	Prospecting.	Railways.	Total.
Chignecto	....	6123	13029	10824	2371	1565	....	221	9721	43854
Jubilee	....	....	366	28	288	41	....	199	51	973
Springhill	....	....	....	29200	7400	....	....	....	....	36600
Strathcona	....	5354	723	3591	1826	1800	....	750	1260	15304
Acadia	....	22397	....	13705	3577	996	....	....	....	40675
Intercolonial	2262	....	....	2962	6828	....	....	....	1858	11648
Marsh	....	8468	....	4524	1827	2541	....	....	890	18250
Gowrie & B. House.	5394	....	4040	250	820	....	860	....	....	5970
Sydney	....	1353	....	2156	2674	6434	....	1025	1413	15055
New Campbellton	....	527	668	....	288	....	....	....	....	1483
Port Hood	....	2900	345	....	....	....	5623	....	....	8868
	....	47122	19171	67240	27899	13377	6483	2195	15193	198680

PRODUCTION OF GOLD FROM 1862 TO 1902.

DISTRICT.	TONS CRUSHED.	TOTAL YIELD OF GOLD.			AVERAGE YIELD OF GOLD PER TON.			VALUE AT $19.00 PER OZ.
		Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.	$
Caribou and Moose River	142539	46594	12	21	....	6	13	$ 885298
Montague	27167	41309	10	18	1	10	10	784882
Oldham	49943	53513	12	16	1	1	10	1016759
Renfrew	50326	43053	....	7	....	17	3	818007
Sherbrooke	259599	145616	12	6	....	11	5	2766714
Stormont	244815	78886	14	21	....	6	11	1498848
Tangier	48122	23295	4	15	....	9	16	442609
Uniacke	59194	41469	15	1	....	14	....	787926
Waverley	147725	68124	11	9	....	9	5	1294367
Brookfield	59420	27404	12	23	....	9	5	520688
Salmon River	117906	41497	5	20	....	7	1	788448
Whiteburn	6583	9625	12	18	1	9	6	182887
Lake Catcha	25894	25700	13	13	1	19	21	488313
Rawdon	12189	9606	5	10	....	15	18	182519
Wine Harbour	58773	30015	14	14	....	10	5	570299
Fifteen Mile Stream	34876	16726	10	5	....	9	14	317804
Malaga	20846	19282	1	7	....	18	12	366359
Other Districts	95746	57951	18	4	....	12	3	1101087
	1461672	779674	9	12	....	10	16	14813814

GENERAL GOLD STATEMENT YEAR ENDING SEPTEMBER 30TH, 1902.

DISTRICT.	TONS CRUSHED.	TOTAL YIELD OF GOLD.			AVERAGE YIELD OF GOLD PER TON.		
		Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
Stormont	35906	6290	1	18	....	3	13
Sherbrooke	15412	3720	9	....	....	4	20
Renfrew	974	1374	11	1	1	8	5
Wine Harbour	4187	1186	2	....	....	5	16
Leipsigate	2390	1135	2	14	....	9	7
Harrigan Cove	3445	1564	3	3	....	8	26
North Brookfield	7736	3051	5	1	....	7	21
Waverley	11789	3049	14	....	....	4	20
Caribou	9890	2162	....	21	....	4	9
Oldham	719	565	10	....	....	15	18
Uniacke	3896	1992	19	23	....	10	6
Lake Catcha	1037	554	8	11	....	10	17
Kemptville	515	389	17	....	....	15	3
Other Districts	4180	1243	....	17	....	5	23
Total	192076	28279	5	13	....	5	13

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.

MONTH.	Stormont.					Sherbrooke.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	4	2371	549	6	15	2	1445	210	6	......
November	3	2604	522	17	9	2	1870	212	4	......
December	3	2632	569	5	......	2	1452	105	13	......
January	4	2969	602	2	......	2	808	167	1	......
February	3	2452	507	5	15	2	1046	201	10	......
March	4	3519	621	14	......	2	802	261	7	......
April	3	3400	469	18	......	2	1052	278	10	......
May	4	3860	612	1	......	2	1310	386	10	......
June	3	3254	431	2	......	2	1436	436	5	......
July	5	3383	495	1	3	2	1284	485	......	......
August	2	2060	297	......	......	2	1488	503	......	......
September	4	3402	612	9	......	2	1419	473	3	......
Total	....	35906	6290	1	18	....	15412	3720	9	......

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Renfrew.					Wine Harbour.				
	No. of Mines	Tons Crushsd.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	60	61	18	....	1	275	93	....	....
November	1	54	54	10	....	1	300	113	....	....
December	1	55	56	....	....	1	290	102	....	....
January	1	88	91	....	....	1	290	102	....	....
February	1	55	42	....	....	2	380	105	10	....
March	1	40	32	15	....	3	395	130	10	....
April	1	40	35	....	....	3	431	134	4	....
May	1	50	43	....	....	2	400	111	4	....
June	1	36	50	....	....	1	278	62	15	....
July	1	55	147	10	....	3	365	82	19	....
August	2	381	360	18	1	2	370	91	10	....
September	1	60	400	....	....	3	413	57	10	....
Total	......	974	1374	11	1	......	4187	1186	2	......

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Leipsigate.					Harrigan Cove.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	196	77	9	....	3	337	120	1	....
November	1	200	70	5	....	3	506	186	3	9
December	1	155	86	8	....	3	409	197	7	....
January	1	209	120	18	....	2	391	181	5	....
February	1	217	107	....	....	2	300	114	....	....
March	1	200	85	15	....	2	258	101	10	....
April	1	252	111	....	....	3	377	113	15	....
May	1	266	98	9	....	2	300	97	9	....
June	1	185	89	15	....	3	309	83	12	18
July	3	285	135	3	14	1	103	19	....	....
August	2	60	32	....	....	1	52	220	....	....
September	3	165	121	....	....	1	103	130	....	....
Total	.....	2390	1135	2	14	.....	3445	1564	3	3

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	North Brookfield.					Waverley.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	670	217	6	....	1	1781	317	16	....
November	1	654	258	10	....	1	1901	398	2	....
December	1	623	277	....	....	1	1549	232	1	....
January	1	644	253	....	....	1	1653	318	....	....
February	1	676	131	19	1	1	1043	173	....	....
March	1	765	175	....	....	1	1168	390	15	....
April	1	832	148	10	....	1	926	330	....	....
May	1	594	300	....	....	1	286	272	....	....
June	1	712	482	....	....	1	692	291	....	....
July	1	567	334	....	....	1	730	268	15	....
August	1	183	149	....	....	1	60	58	5	....
September	1	816	325	....	....			No crushing done.		
Total	......	7736	3051	5	1	......	11789	3049	14	......

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	CARIBOU.					OLDHAM.				
	No of Mines.	Tons Crushed.	YIELD OF GOLD.			No. of Mines.	Tons Crushed.	YIELD OF GOLD.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	4	835	247	10	12	1	58	35	8	6
November	4	1002	198	9	1	1	56	17	18	....
December	3	726	126	7	18	1	80	82	5	12
January	3	848	125	13	12			No crushing.		
February	3	536	298	14	12					
March	3	1626	299	1	12	1	98	125	10	....
April	2	1084	198	17	....	1	127	58	9	....
May	3	1070	197	10	14	1	57	35	15	....
June	3	479	113	8	12	1	110	111	5	12
July	3	548	75	2	12			No crushing.		
August	3	548	132	9	....	1	133	93	7	....
September	2	588	148	16	12		Mortared	5	11	18
Total	......	9890	2162	....	21	......	719	465	10	....

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Uniacke.					Lake Catcha.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	1	138	56	15	....	2	102	52	2	....
November	3	450	135	18	....	2	136	83	19	12
December	2	455	46	4	....	2	118	46	5	....
January	3	441	149	16	....	2	134	60	....	5
February	3	281	132	17	....	1	10	17	3	3
March	2	366	569	14	....	2	67	13	14	6
April	2	321	267	7	....	1	20	22	5	....
May	2	122	308	9	11	1	52	39	15	13
June	2	252	19	15	....	2	99	46	4	13
July	1	400	23	17	....	2	103	51	....	17
August	1	257	31	16	....	2	106	59	15	....
September	2	403	250	11	12	1	90	62	3	14
Total	.....	3896	1992	19	23	......	1037	554	8	11

MONTHLY STATEMENT FOR EACH GOLD DISTRICT.—(*Continued.*)

MONTH.	Kemptville.					Other Districts.				
	No. of Mines.	Tons Crushed.	Yield of Gold.			No. of Mines.	Tons Crushed.	Yield of Gold.		
			Oz.	Dwt.	Grs.			Oz.	Dwt.	Grs.
October	....	....	....	....	....	4	105	111	8	....
November	1	160	98	15	....	4	179	112	13	....
December	1	20	8	....	....	7	217	100	14	4
January	....	....	....	....	....	5	220	93	....	11
February	....	....	....	....	....	8	236	123	10	15
March	....	....	....	....	....	5	97	46	5	16
April	1	50	36	18	....	2	92	45	....	21
May	1	90	50	6	....	2	79	86	9	....
June	1	40	33	10	....	4	751	179	....	15
July	1	20	29	....	....	4	671	128	6	8
August	1	35	45	17	....	4	394	96	....	20
September	1	100	87	11	....	6	1139	120	11	3
Total	......	515	389	17	....	......	4180	1243	....	17

CUSTOMS CANADIAN.

PORT OF WINDSOR, N. S., 1902.

Memo. of Gypsun and Moulding Sand exported from the Port of Windsor, N. S., and Outports for the Year ending 30th Sept., 1902.

	TONS.	VALUE.
Gypsum	168,717	$159,296 00
Moulding Sand	390	1,560 00
Total.................	169,107	$160,856 00

WILLIAM O'BRIEN,
Collector.

INTERCOLONIAL RAILWAY.

Statement showing the number of Tons of Coal received at the following stations from Mines in Nova Scotia, during the year ended 30th September, 1902.

Destination.	Tons.	Destination.	Tons.
Halifax	46886	*Brought forward*	335837
Dartmouth	27115	Tracadie	25
Waverly	293	Harbour au Bouche	32
Bedford	706	Mulgrave	369
Windsor Junction	14877	Point Tupper	314
Wellington	21	Hawkesbury	99
Enfield	143	River Denys	36
Elmsdale	453	Orangedale	35
Milford	12	McKinnon's Harbour	7
Shubenacadie	189	Iona	128
Stewiacke	403	Grand Narrows	190
Brookfield	891	Christmas Island	39
Truro	13463	Boisdale	588
Valley	6	Barrachois	38
West River	23	Georges River	32
Glengarry	18	Scotch Lake	38
Hopewell	1310	North Sydney Junc.	22
Ferrona Junction	62133	North Sydney	99
Stellarton	8142	Belmont	6
Sylvester's	19	Debert	6
New Glasgow	7920	East Mines	6
Trenton	63929	Londonderry	1665
Pictou Landing	83528	Wentworth	7
West Merigomish	6	Westchester	6
Merigomish	58	Thomson	7
Avondale	50	Oxford Junction	7
Antigonish	3195	Oxford	906
South River	12	Pugwash Junction	270
Heatherton	18	Pugwash	1300
Bayfield Road	18	Wallace	286
Carried forward	335837	*Carried forward*	342400

INTERNATIONAL RAILWAY.—*(Continued.)*

Destination.	Tons.
Brought forward . .	342400
Malagash	41
Tatamagouche	348
Denmark	136
River John	387
Meadowville	7
Scotsburn	449
Pictou	12341
River Philip	6
Springhill Junction . . .	28
Athol	21
Maccan	41
Amherst	17397
Aulac	195
Sackville	5968
Dorchester	2611
College Bridge	332
Memramcook	154
Shediac	855
Point du Chene	36
Moncton	15143
Salisbury	1745
Peticodiac	512
Penobsquis	13
Sussex	835
Apohaqui	24
Norton	376
Bloomfield	7
Hampton	833
Nauwigewauk	7
Rothsay	92
Coldbrook	21
St. John	80567
Kent Junction	385
Rogersville	16
Chatham Junction	10604
Millerton	141
Derby Junction	32
Newcastle	100
Gloucester Junction . .	1818
Carried forward . .	497024

Destination.	Tons.
Brought forward . .	497024
Bathurst	96
Charlo	12
Dalhousie	167
Campbellton	12
Metapedia	1969
Rimouski	134
Riviere du Loup	5778
Montmagny	16
St. Henri Junction . .	30383
Chaudiere Junction . .	918
Levis	3480
Point Tupper	445
Kingsburg Junction . .	558
Nicolet	18
Drummondville	16
St. Hyacinthe	828
Beloeil	393
St. Lambert	478
Montreal	39719
G. T. R. via Montreal.	8578
do Chaudiere	3911
do St. Hyacinthe	865
C. P. R. via St. Rosalie	214
do St. John . .	4830
Total	600842

SUMMARY.

FROM	TONS.
Albion	36360
Stellarton	203846
Westville	19987
New Glasgow	61219
Point Tupper	1212
North Sydney	63764
Sydney	16631
Springhill	162425
Maccan	35398
Total	600842

INTERCOLONIAL RAILWAY.

Statement showing the various kinds of Coal (in Tons) received from the different Mines in Nova Scotia for the use of the Intercolonial Railway from the 1st October, 1901, to the 30th September, 1902.

MONTH.	Dominion Coal Company, C. B.	Cumberland Railway and Coal Company, Springhill, N. S.				Canada Coals and Railway Company, Joggins, N. S.			Acadia Coal Company, Stellarton, N. S.				Intercolonial Coal Co., Westville, N. S.				Nova Scotia Steel & Coal Co'y., New Glasgow, N. N.		Minudie Coal Co'y., River Hebert, N. S.		Inverness Railway & Coal Co'y., Broad Cove, C. B.			Strathcona Coal Co , River Hebert, N. S.		Port Hood Coal Co'y., Port Hood, C. B.	Ripley & Blenkhorn, Maccan, N. S.	Micmac Mining Co., Maccan, N. S.
	Round.	Round.	Run of Mine.	Slack.	Culm.	Round.	Run of Mine.	Slack.	Round.	Run of Mine.	Slack.	Coke.	Round.	Run of Mine.	Slack.	Coke.	Round.	Run of Mine.	Round.	Slack.	Round.	Run of Mine.	Slack.	Round.	Run of Mine.	Round.	Round.	Round.
1901.																												
October	6224	6618	....	....	....	2903	....	70	3953	......	143	13	2637	....	....	....	59	.....	212	.....	.....	....	...	.....	....	....	......	......
November	5942	5824	1015	40	....	1776	365	81	4358	......	61	......	3614	....	....	....	....	.....	911	126	585	....	...	.....	.....	....	......	......
December	5841	3382	883	....	....	691	21	137	2740	......	82	......	2613	....	....	...	157	.....	860	135	726	....	...	....	.....	....	......	......
1902.																												
January	6150	2993	390	....	19	1457	105	....	3125	......	37	......	3329	....	....	....	1080	....	954	.....	405	....	...	.....	.....	529	......	......
February	4286	6217	444	241	....	1052	155	....	4157	......	54	......	3795	....	6	.	695	....	872	89	835	..	...	.....	.....	15	......	38
March	4770	4349	....	288	....	1254	136	....	1535	......	159	.....	4055	....	19	....	918	.....	1035	162	1427	....	...	.....	.....	284	21	56
April	8361	4200	....	292	....	813	....	....	3483	......	39	......	4185	...	....	10	961	.....	987	.....	2526	....	...	83	.....	....	21	......
May	6053	3787	267	117	....	625	....	....	2752	......	71	.....	1606	231	....	....	210	.....	652	.....	3002	...	29	.....	.....	....	19	......
June	9583	4725	1172	179	.	872	...	....	3649	......	67	......	701	....	...	....	79	.....	898	....	3362	....	...	.....	.....	....	......	......
July	9049	4741	36	143	12	563	14	93	2147	......	43	......	1874	17	....	...	102	....	1027	.....	2027	....	...	.....	.....	....	......	......
August	7650	3317	1701	....	....	120	189	....	3371	3278	58	Culm. 25	433	441	..	....	66	19	152	.....	117	....	...	115	20	....	......	......
September	5717	46	1703	139	....	.....	50	....	81	8436	99	Coke. 29	....	1098	....	....	25	68	....	.....	1589	2063	...	.....	471	....	......	......
	79626	53199	7611	1439	31	12126	1035	381	35351	11714	913	Coke. 42 Coke 25	28842	1787	25	10	4352	87	8560	512	16601	2063	29	198	491	828	61	94